

VOLUME VII.

BUILDINGS, FINANCIAL, LANDS, ORIGINAL COSTS, RIGHTS OF WAY,
WATER RIGHTS

IN THE
District Court of the United States
FOR THE
Northern District of California

SECOND DIVISION

SPRING VALLEY WATER COMPANY,
Plaintiff,

vs.

CITY AND COUNTY OF SAN FRAN-
CISCO, Et AL.,
Defendants.

Nos. 14,735, 14,892,
15,131, 15,344, 15,569,
Circuit Court of U. S.,
Ninth Judicial Cir-
cuit, Northern Dis-
trict of California,
and 26 and 96 District
Court of U. S. North-
ern District of Cali-
fornia, Second Divis-
ion.

ABSTRACT OF TESTIMONY TAKEN BEFORE HONORABLE
H. M. WRIGHT, STANDING MASTER IN CHANCERY FOR
THE DISTRICT COURT OF THE UNITED STATES IN
AND FOR THE NORTHERN DISTRICT OF CALIFORNIA,
SECOND DIVISION, IN THE PROCEEDING ENTITLED
SPRING VALLEY WATER COMPANY vs. THE CITY
AND COUNTY OF SAN FRANCISCO, Et AL., IN EQUITY
NOS. AS ABOVE.

For Defendants:

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UNIVERSITY OF CALIFORNIA
LOS ANGELES



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ONE HUNDRED AND FOURTEENTH HEARING.
MARCH 13, 1916.

Witness: ALLEN HAZEN for Plaintiff.

8297 (Counsel for Defendants substituted without objection new exhibits for Exhibits 125 and 125-h).

8298 Witness: ALLEN HAZEN for Plaintiff.

DIRECT EXAMINATION BY MR. GREENE.

Hazen Referring to the following question and answer at the top of page 4467: "Q. Did you gage any other pipe, except the Alameda pipe? "A. I don't think I did", I understood that question to relate to gaging the thickness of the plates, and I understood it to be limited to the plates of No. 9 gage; it is true as applied to that, but otherwise it would not be true, as I did gage the other thicknesses of plates.

8299 Referring to Mr. Dorward's statement, on page 6016, as follows: "From your inventory I find that a number of straps, and a number of man-holes were shown here. I went into the cost of making these man-holes, and making those straps in the shop, and attaching them, and taking the weight of the pipe," and so forth. In other words, he went through the schedule, and took the straps and the man-holes that were listed; the schedules do not show the bends, which are the principal item of expense, so Mr. Dorward ignored the principal item of expense in making this calculation. The only information as to the actual cost of making the bends in the Spring Valley system, that I was able to get—I am referring to large orders, for on some of the recent bills where we had the cost of bends, they run much higher, because they were small pieces of work, and ordinarily were special work. We had the San Andres 54-inch line, and we had the Alameda line, which overran the contract price three-tenths percent per pound, as I figured it out. For those two lines there is not a bend listed in the

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

schedule, so this conclusion of Mr. Dorward's ignored the principal item of expense. His figure of .055 of a cent per lb., and my figure, are not comparable. They do not figure the same work at all.

Referring to submerged pipe; the schedule shows the mathematically calculated weights for the dimensions that were shown by the original plans, without any allowance for over-weight, which as a commercial proposition always has to be met without any allowance for loss of material in the prosecution of the work, or of waste, and without any allowance for the fact that the design called for a bell without any clearance, which could not be put together, and had to be modified. The company has a record of the weight of a considerable part of this material, and it greatly overruns the weight in the schedule. In making my estimate, I used actual weight, so far as it was available, and for the rest of it I allowed the proportion of excess weight and waste, which in my judgment was fairly required to be included in a construction of this kind. In my judgment, the figures that I used represent as closely as can be reached the material that is actually in those lines, and that would have to be used in reproducing them in the same way.

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My statement is limited to submarine pipe, and does not relate to riveted pipe at all. I believe it is a case where, due to someone's oversight, or some way or other, the material that was put in the inventory is less than the fact, and less than the work could be built for. In the case of the Sunol Tunnel, that is where I estimated open cut work as open cut at a lower price, instead of estimating it as tunnel work as was agreed upon. I don't recall that Mr. Dorward put in any figures on the submarine. The figure he put in was what he estimated would be required in advance, based on the company's plans.

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I consider the Arroyo Valle and the San Antonio practical reservoir sites, and they are likely to be developed. The three reservoir sites proposed, the Calaveras, San Antonio, and the Arroyo Valle together will provide rather less storage than is needed for a full development of the Alameda sources; but in connection therewith the added storage obtained by raising the Crystal Springs Dam can be brought into play, and taking it altogether, it will provide a suitable amount of storage for the whole development.

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Questioned by Mr. Searls.

I think that the Arroyo Valle and the San Antonio Reservoir sites are likely to be developed for supplying San Francisco with water, even if the contemplated Hetch-Hetchy project is completed. They might be developed for supplying the east side of the bay with water. The water that can be obtained by building those dams would be very much cheaper water than the Hetch-Hetchy water can ever be delivered for at a corresponding location. The people of San Francisco would spend less money in developing the Alameda sources than in

8304 bringing in the mountain water from the Hetch-Hetchy development, because a million gallons of water can be obtained very much more cheaply there than it can be brought from Hetch-Hetchy. Even after you bring in some Hetch-Hetchy water, and were using it, and you wanted more Hetch-Hetchy water, you could bring this water in very much cheaper than you could build an additional pipe line for to carry that additional supply across the San Joaquin Valley. As a practical proposition, you would never build a pipe line from the Hetch-Hetchy to bring in a fifty year supply of water. That would be inexpressible stupidity.

8305 Taking up the present condition of the works, looking at it in its broad aspects, and without going into minor details: The amount of storage in the system has been sufficient up to the present time. If the last few years had been dry years instead of wet years, that might not have been the case. While I think the city was taking a risk in having no more storage than it did have, the time having passed and no shortage having occurred, I do not think it is worth while to discuss that side of the subject further. With the pipes and the pumps, which are the means of bringing in the water to the city, a very similar condition exists; the pipes and pumps are being worked to the limit of their capacity. It is not good engineering practice to have your pumps and pipes in the supply line running at full capacity all the time to meet the supply. It is customary to have a reserve, so that in case of breaks or accidents there will be a reserve capacity to catch up afterwards. The reserve capacity is to meet the peak loads, because the amount of water that is sold is not the annual average all the time; it is varying from month to month, from day to day, and from hour to hour, and the system has to take care of the peaks, not merely the averages. The pipes and pumps have been sufficient to maintain the supply during this period, although I think they have been used to a limit that ordinarily is not warranted. That is not safe. There may be some question as to whether they brought enough, because undoubtedly it is a fact that if more water had been available in the city, it could have been sold, and would have been actually bought. I am referring to the undeveloped parts of the city. The construction of the Calaveras Dam and Reservoir will double the amount of water that can be supplied. The construction of the San Antonio and Arroyo Valle Reservoir, and the raising of the Crystal Springs Reservoir, will still further increase it, until from 100 million to 120 million gallons a day can be supplied. As a mere matter of hydraulics, the larger amount could be supplied from these sources, but I take into account in making that statement that there are other riparian owners whose rights will have to be protected, and that substantial quantities of water will have to be allowed to pass at all times to cover those rights.

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In regard to my qualifications for reaching that conclusion; I have studied the records of the company, I have studied the watersheds, the records of rainfall, and I have assumed that reservoirs could be built at San Antonio, and Arroyo Valle of certain sizes and capacities, which I have taken from the records; I have inspected the sites, and have made some estimates of how the system could be developed, and what could ultimately be obtained from it, using the methods that I usually follow.

Questioned by Master.

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The uncertainty as between 100,000,000 and 120,000,000 gallons daily was due to the indeterminate character of the rights to the water by riparian owners and others; perhaps not the whole of that uncertainty, there are other causes of uncertainty. I think I might reduce that margin of 20,000,000 a little, but I don't think it is necessary to do so for this purpose. If there were no other rights existing, I think that the maximum development would be more than 130,000,000 gallons daily. For instance; to take a specific case, there is another company that is drawing water from the Niles Cone in large quantities, and has for a good many years, and I assume that enough water will have to be allowed to go by always so that that draft may be used. The Spring Valley Water Co., in acquiring its rights to divert, oftentimes did so by the agreement that certain people, and certain corporations were to be furnished with certain quantities of water, either without cost, or at a fixed price which was less than cost. I have looked on all agreements like that as being virtually a first mortgage on the water, and the quantity which the company can take and sell is the whole amount, less all the amounts that have to be furnished under arrangements of that kind. As I understand it, the possible production would be more than 120,000,000 gallons daily, and with these rights taken care of, you might have 120,000,000 gallons available. I don't think it would go down as low as 100,000,000 gallons daily. I think I could conservatively give you a larger figure. I have not prepared myself particularly for that, but I think that is close enough for this purpose.

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Before the Calaveras water is available to San Francisco, a new aqueduct must be built, and that aqueduct will cost a great deal more than the reservoir. A certain size of aqueduct must be selected, and it must be large enough to anticipate a reasonable amount of growth. If it were built too small, and another one was to be built shortly after, the cost of the two would be much greater than the cost of a single one of the same capacity. On the other hand, if the aqueduct is built too big, it puts a burden on the rate-payers of the near future, which is not warranted, and which they would have a right to object to. If it were known certainly in advance just how fast the city would grow, the economical point to anticipate growth could be calculated with a fair degree of accuracy; but here we have the uncertainty of what the

I have assumed that the metering would make substantial difference with the scale of rates. The basis for judging of that is shown in the last two columns, the dollars per capita of receipts, and the dollars per million gallons. The average figures for the two periods, one for nine years of history, and the second for twelve years projected, are given at the bottom of the page. In the lowest line the average annual increase, which means for the population, that, taking it right through, amounts to 2.64% increase per annum of population. That is taken for the mean of the first period, and the mean of the second period, and computed for the average lapsed interval between, which is $10\frac{1}{2}$ years; so I have assumed 2.64 increase in population. Many people believe that San Francisco will grow faster than that, and I think very likely it may, but that is a fair rate of growth; I don't think one investing money in new works would be justified in assuming it will grow faster.

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The consumption I have estimated to increase at the rate of 2.09% per annum, or very slightly less than the increase in population. The gross income I have estimated will increase 3.19% per annum, slightly more than the increase in population, which is in accordance with waterworks experience, that at fixed rates the income increases a little more rapidly than the population. The increase in dollars per capita is .56%, and in dollars per million gallons 1.12%; that is, under the meter system the waste is cut off to some extent. That is the principal object of the system. The revenue for the whole output is increased from \$218 per million gallons in the first period, to \$245 in the second. That does not mean that the water actually used will be paid for at a higher rate, but that a good deal of useless waste will be cut off.

The fact that the percentage in the last column is twice that of the column preceding, has no significance; that is purely accidental.

On page 3 we start with the gross revenue, which is brought forward from the preceding table, and enter first the operating expenses. The operating expenses have averaged 38.7% of the gross income during the 9-year period. I carried them forward for the first two years at 39%, and then reduced them in three steps to 34%. That reduction reflects the increased economy in operation which will come with more ample pipe capacity in the system, and the reduction in pumping expense, which at the present time is more than normal, because the pipes are not fully adequate. The three steps in this reduction are the following: The first one, when a new pipe line is available from San Andres to Honda, cutting out some of the high service pumping in the city. The second, when the pipe line aqueduct is available from Calaveras to Crystal Springs, and when the operation will be maintained for a few years by pumping from Crystal Springs to San Andres through the pump and flume that are now available. The

third, when the aqueduct is completed all the way to San Andres, and the Calaveras water comes to San Andres, and thence to Honda by gravity all the way. That will permit shutting down the Ravenswood Booster Station, reducing the lift and the work at the Belmont Station, and reducing the pumping expenses at various other places. Deducting the operating expense from the gross revenue, leaves the operating revenue, which is shown in the next column, which increases faster than the gross revenue, because of this decrease in pumping expense.

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In the next column I have entered the depreciation in structures. I have taken that at 8.45% of the gross revenue. There were two methods of computing annual depreciation that I presented, which I called the second and the third methods. The second method resulted in an average annual depreciation of 1% of the structures; the third method in 8.45% of the gross revenue. I think both of these methods are equally good. They result in handling the same data in a different way; they result in somewhat different results as applied to the future. About 20% more by the third method is applied to the future than if the second method were used. I have no special preference for the third method as compared with the second; I am perfectly willing that the second should be used. Perhaps I should be disposed to take the mean between the two, which would give about 10% less than these as the most probable use of the data; but I used the third method for this calculation, because it can be applied directly to the revenue that I have in the column, and it gives me a definite result I can carry forward without cut, which would be necessary in this estimate; so it simplifies the calculation to use it, and I thought it was quite close enough for the purpose of forecasting the future. In any revision, however, I have no objection to using the other method. The last column simply represents the difference between the one preceding it, and the one preceding that, and it shows the net revenue when the depreciation is deducted. The figures of gross income and operating expenses I have taken from some figures I had from Mr. Muhlner, and I have not attempted any analysis of them at all. If they are subject to any correction, why then that would, of course, run through all that follows. The figures for estimated revenue and operating expense I made myself, and in forecasting the future I used that as a guide, so that if any revision of past figures shall be made, I expect a corresponding revision in the future figures. I used nothing from Mr. Muhlner, except the facts he had as part of the history of the company. I have not attempted to audit his books in any way, but have just taken his figures and used them.

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On page 4 I have shown the actual purchases of land, in thousands of dollars, and the amount of assessments paid on the land; these assessments being assessments that were not taxes. Projecting

8317 that into the future, I have made the very moderate assumption that an average of \$100,000 will be spent for buying land in each year. A great deal of land will be necessary in completing the Calaveras works, but how much it will be, I cannot tell; but aside from that, with holdings and prospects like those represented by this system, there will be opportunities from time to time to buy additional areas, and it would be best to do it; I assume that will always be done. I should buy the land for the aqueduct from Calaveras for a right of way.

Mr. Dillman: I have not thought the matter over as to how much that right of way could be bought for, but \$100,000 a year for a good many years would certainly buy that right of way, and a good deal of other lands.

8318 Mr. Hazen: The company now owns part of the right of way, but there is a large amount to be bought, and also lands for rounding out the holdings of watershed lands particularly. For instance, the Mills property between San Andres and Crystal Springs. Should there be an opportunity to buy that at a reasonable price, I think the company ought to buy it. There are a great many pieces of land corresponding to that.

I made no estimate of the assessments in this table, and I have not included in it any lands except those directly for water supply purposes.

8319 Refer to page 28. My estimates to reproduce the structures, less depreciation, were \$21,933,388. From that I make these deductions on page 5. The items upon which agreements have been reached, amounting to approximately \$8,000,000, were less than my estimates. My estimate for overhead and depreciation being applied to the differences by \$295,150. I deduct further an allowance for paving over the supply mains of \$36,500; that also includes overhead, and allowance for depreciation. I deduct 84% of my estimate of the cost of cutting through and replacing the pavement over the pipe in the distribution system. This 84% is an approximate figure. If this could have been delayed a little, I suppose the exact agreed figure could have been substituted, but that, as I understand it, closely approximates the figure that will be reached. Then I have deducted the clay dam that Mr. Searls asked me about the other day, because I find that during the interval of this rate case that the clay dam has not been in use; it is connected so that water can be diverted through it from the Pilareitos Tunnel. It is being diverted now. It forms a part of the system used in this way, but during this period it actually was not used, so I marked it off. Deducting these items, it brings my estimates for structures, less depreciation, to \$20,292,638. I used the round figure \$20,000,000 for the rest of the calculation; in other words, I take off \$292,638 to cover any further reductions that might come out of the agreements, or otherwise, in the

schedule. Thus, for comparison with the other totals, the \$20,292,000 is made up of main structures, \$19,854,000, inventories, which I think are agreed to, \$289,940, and the Niles Aqueduct, \$148,560. I separated the Niles Aqueduct, and included it as part of the structures, and I shall have something to say in regard to that especially later on, and I want it excepted.

I consider these all in use. I take off the clay dam as not in use. I have been over the inventory, and I have not found any other items that I think ought to be deducted. Where slight use has been made of items here and there, I have usually estimated very heavy depreciation as I have gone over the property, and I think I have taken care of, in the depreciation allowance, all, or substantially all of the allowances of that kind should be made. I did not include the Ravenswood wells in my list. There are several items in the inventory that that I did not estimate in my list at all. I did not include the Pleasanton ranch houses, or the Pleasanton drainage ditches. I think there are contingencies under which the ranch houses should be taken into consideration, but I did not take them into account in this calculation.

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I have not the list of the structures which I have not used. I left out the books and the records of the company; in doing that I followed my usual practice; they are valuable, but I left them out because the allowance for administration and overhead ordinarily covers the accumulation of books and records, and to estimate it a second time would be a duplication. Due to the loss of the records by the fire, the records in the company in this case are very much less complete than they ordinarily would be. I have not penalized the company in this calculation because they have not a complete set of records.

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In the way that I have mentioned, I reached the \$20,000,000 for the structures as of January 1, 1914, in Table 4, shown on page 5; starting with that, I have carried it forward and backward, taking into account the annual depreciation, and the construction account from year to year. The amount spent on new structures for the nine years of history excludes the Calaveras development entirely. Because of that exclusion, it differs from the figures I first had from Mr. Muhlner by quite an important extent. The differences, and the way they compare, are shown on page 9. I have taken all these quantities to the nearest thousand dollars, so that my figures will be sharply separated from the accountant's to carry out the dollars and cents. For instance, in 1913 there was spent on new structures \$151,000; the annual depreciation was \$284,000; so there was a reduction of \$133,000 for that year in the structure account. Going backward, that \$133,000 is added to the \$20,000,000, making \$20,133,000 as the amount the year previous to the date of the appraisal. Omitting Calaveras, the depreciated reproduction cost of the struc-

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tures grows greater as you go back from 1913. If Calaveras is brought into the account, it practically balances, and the amount remains unchanged.

Questioned by Master.

8323 The figure \$1,170,000 at the end of the column is the cost of Calaveras, with interest to the first of January, 1916. On pages 10 and 11 is an estimate which shows how that is made up—with a rough estimate of the cost to finish.

The account for the future is made up in the same way, but based on the estimated construction which appears on the following pages.

DIRECT EXAMINATION BY MR. GREENE.

On page 6 is the estimated construction account, 1916 to 1927, inclusive, twelve years. This is based on labor and materials at the same average cost as in 1913-14. That is the same basis that I have used in the estimates on reproduction. It includes engineering and administration, but not interest during construction.

I have, first, to complete the Calaveras Dam and Reservoir \$1,600,000. For a pipe line from Calaveras Reservoir to San Francisco by way of San Andres Reservoir, with tunnels and masonry aqueducts large enough to serve a second line, \$7,237,000. The detail of that is shown on page 12 and the following pages. I won't go into that further unless you wish.

Then for improvements and additions to the present supply works, \$300,000; that is because it is experience that with works like these there are always things to be done, which are additional construction and not in the way of repairs; I have assumed, without making the schedule, that some small expenditures would be made from year to year.

The next item is putting meters on 45,000 services not metered at the present time, nearly all $\frac{5}{8}$ inch services; that is to say, the large services are for the most part metered. These are single houses. I estimate \$12.50 per service, or a total of \$560,000.

8324 Then there are additions to the distribution system. The distribution system is inadequate at the present time. I assume that it was adequate when the population was 450,000, and it is to be increased to serve 610,000 people at the end of the period, a growth of 160,000 people being provided for. Some of that is to cover work that should have been done before this if the service had been fully adequate.

This estimate includes the pipe, reservoirs, high service pumps, meters, the new services, and so forth, complete, at \$25 per capita, \$4,000,000. This \$25 per capita is based on a study of the costs of reproducing this system in proportion to the population served and also upon the experience with the cost of extending the distribution systems in Eastern cities where with cheaper pipe, because of freight

and cheaper labor, the average cost in a general way is about \$20 per capita.

Under the rules of the Railroad Commission the company pays for new services, which it has not done during most of its history.

I estimate that for this population there will be 15,000, and that they will all cost \$25 each, including the meter, or \$375,000.

Then for renewals, repairs of miscellaneous old structures, such as pumps, boilers, flumes, et cetera, being taken from the depreciation account, \$1,000,000. Total construction account estimated for twelve years \$15,072,000.

The Calaveras work, with interest to January 1, 1916, added to that, as coming into the calculation now for the first time brings it to \$16,242,000. That does not include the purchase of additional land and rights for which further allowance must be made.

The note at the bottom of the page shows there is a slight discrepancy. There may be others. I did not attempt to make the calculations check out absolutely. They were blocked out rapidly in general terms.

Page 7 shows the times at which I estimate that the several items in this construction account would normally be carried out, beginning with the Calaveras, which I brought into the account January 1st of this year, the completion of the Calaveras Reservoir being assumed to go through the next three years, the pipe line from San Andres to Honda being built in the same period, the pipe line from Calaveras to Crystal Springs being built really two years later, although some small expenditures on account of it would be incurred at once under this estimate; and then an aqueduct carrying the line to San Andres following in the years to 1921.

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The miscellaneous improvements to the supply works I have assumed as all coming in the later years of the period; naturally some of them would be done earlier; I assumed though that everything of that sort would be put off as far as possible pending the heavier expenditures on new works.

The meters on the present services will come along in the next four years. The new services and the meters are distributed evenly throughout the period.

The distribution system I have assumed, notwithstanding its deficiencies, that the work of adding to that would be postponed for a few years until the heavier construction on the Calaveras aqueduct was out of the way and only more pressing matters attended to in the first four years.

For renewal of old works, this being money that comes out of the distribution fund, I have assumed that most of that also would be done in the later years of the period.

In the last column is the sum of all these items making up the amount of new construction required to maintain the service during

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these years. These are all brought back into the table on page 5. The total amount of structures is shown on page 5, and I have brought in this again for comparison, the population, and have figured the structures per capita for each year, beginning with 62.40 per capita for the first year, which is high because the population was below normal, that is, that was after the fire and 330,000 population was a good deal below what may be called the normal population of San Francisco for that year; that made the per capita in structures high. That has fallen to 41.30 at the present time, averaging for the period \$48.90 per capita.

With the new construction this will rise, reaching a maximum on my schedule of 53.80 per capita, and then falling slightly to the end of the period to \$52.10 per capita, averaging for the whole period \$50.40 per capita. I should say as the result of this study that the normal investment in structures for this system was at least \$50 per capita, probably a little over \$50 per capita.

The \$41.30 at the present time represents in a general way about 80% of the normal investment in structures for the business that is being done. The average increase in structures is 3.12% per annum, as against an increase of 2.64% for the population. The increase in structures is slightly more than the increase in population, but that is entirely accounted for by the fact that the works are underbuilt in the first period.

This table assumes that the basis of valuation as of December 31, 1913, remains unchanged during the whole 21-year period, that is, without change in prices on relative costs of building. Of course, that would not be true, but it is an assumption made for the benefit of the discussion. For instance, if I had been valuing the works in 1907 instead of 1913, the basis of prices would have been different. Valuing it as I have in this case I have intended to take the average prices for materials and labor over the period from 1907 to 1914.

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If the calculation had been made in 1907 actually instead of projecting it backward I suppose I should have used the average prices for a certain period prior to 1907 and that average would have been very much lower than the average for this period. That of course is ignored entirely in this calculation but I state it because it may be important to know that in comparing it with other estimates that have been made at other times.

Now, in regard to the rate at which these new items of construction are brought into the account there are two procedures. It is open to debate which one should be used. The first one is to bring each item into the account when the money is paid out. That is the system that I have followed in this case; that is the system I usually follow in making calculations of this kind. By the other system nothing would be brought into the account until the structure was completed and put in use.

If it were to be followed, for instance, taking the Calaveras Reservoir complete, the first item would not be brought in at this time, but would be carried forward with interest and other costs would be added and say in 1918 and 1919 when the reservoir was finished all the amounts would be brought in, plus the interest which has accrued in the interval, and which is not shown by this system. That is a method that is often used and some people think it is a better method than bringing them in when the expenditures accrue.

If it were not for the step method of increase that I mentioned I think there would be no question but what the second method would be better; but here taking into account the steps that exist and my idea that the rates must be average rates that will meet all conditions throughout a term of years, it seems to me it is simpler to bring in the expenditures when they are made than to carry them forward; I think it amounts in the end to pretty nearly the same. It is a matter of bookkeeping.

In one event the amounts come into the calculation earlier and they are not loaded with the interest, on the other case they come in on an average two years later, with an average of 12% interest added. I don't think it makes any vital difference which method is used. I have no objection to the other method if anyone prefers it.

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There seems to be a little inconsistency in bringing Calaveras into the account as of January 1, 1916,—which is following the other method. I have done that because it is the method the company is actually following, it is an adjustment I did not try to make.

In that connection, Mr. Muhlner's Calaveras account is about \$1,160,000; the amount which I used is \$110,000 more; the difference is accounted for by the fact that I have taken into account all the expenditures of the agreed inventory, with interest, while Mr. Muhlner's account started on some date and ignored all the expenditures made prior to that date.

On page 8 is a summary of the various matters and shows the amount of new capital on these assumptions that will have to be raised to provide for the development of the system.

This shows, first, the construction account, then the amount of depreciation marked off in the operating account each year, and which I assume will be applied to construction, and an allowance for land to be bought, and a total of new material needed, which is the construction, plus the land, less the depreciation for each year, amounting to \$12,000,000 in the twelve year period; the total amount in five years that will be required is \$8,729,000. These figures are all based on the rather conservative estimate of the growth of the city. If the city grows faster more works will be required and these amounts will be increased.

The next business that is to be taken up is to get a rating base; by that I mean a certain amount on which rates are to be calculated.

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In reaching a figure to use in this way it is my intention to use a figure which is not necessarily or actually the value of the property.

The method of making up the rating base is inseparably connected with the rate of return that is to be used in connection with it. It is possible to use a smaller base, excluding various items, and in connection therewith to use a higher rate of return, or otherwise to use a lower rate of return applied to the full value of the property, getting the same result in either case.

A rate of return as I look at it is a rate sufficient to make the investment a reasonably attractive one to the investing public and to make it certain that money will be available to carry out an enterprise if it were to be undertaken. Looking at it from that standpoint there is not any fixed rule to be followed in making up the rating base.

If the whole value of the property is included in the rating base obviously the investor will be satisfied with a smaller rate of return. But if various items of value are excluded and a smaller rating base is taken then a higher rate of return must be allowed to make the business equally attractive.

In making up my rating base, I have excluded, for instance, the cost of cutting through and replacing the paving over the pipes. The amount estimated under this item has frequently been incorrectly referred to in reproduction estimates under the heading "Paving"; that is, it has been listed as if the company owned the paving. That of course is not correct.

As far as this consideration comes into an estimate it is part of the cost of the pipe. The cost of laying a pipe in a paved street is greater than the cost of laying a pipe in a street that is not paved. As I made up my schedules the cost of all the extra work involved by the expense of the paving is carried into the price of the pipe. And that is the way I think it ought to be. This extra work involved by the paving has to be done when pipes are laid. Doing it is necessarily a part of the cost of reproduction. Separating it from the cost of reproduction does not seem to me quite logical. I find it is difficult to see any reason for separating the paving and not separating other things that might be mentioned.

If we took up one thing after another I don't know what the end results would be. So to exclude the paving and stop there does not seem to me like a very logical proceeding. However, it is what seems to be necessary at this time and from an equitable standpoint in discussing rates something can be said in support of it.

That is the procedure I have adopted in this case, that is to say, I have excluded all the allowance growing out of the consideration of paving as far as the paving was laid after the pipes. So far as the pipes were laid after the paving, they remain. Practically I have never been able to see that it made any difference with the

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value of the pipes, whether they were laid before the paving or after.

It commonly happens in the development of a system that a certain street is going to be paved and that the water company or a municipality lays new pipe or larger pipe in it in anticipation of the paving and frequently lays it sometimes perhaps several years earlier than it otherwise would lay it, and as far as that is the case it spends the money earlier and loses the interest on it; the work costs the owners more, and it is just as valuable at the end of the period as if they had waited until after the paving was laid and had then cut through it, laid the pipe and replaced it.

I have also had to do with the sale of water works systems where there were many pipes laid in paved streets; I have represented both the buyer and the seller in negotiations of this kind. I have also had to do with condemnation suits. In my judgment the cost of laying the pipes as represented by the full cost of reproduction is a very important element to be considered in determining the value of the system.

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I am inclined to think that that part of the whole cost of reproduction represented by the cost of cutting through and replacing the mains is as potent or substantially as potent a reason for giving or making a price as other parts of the cost of reproduction.

To take a specific case of a pipe in Market Street, we will say, the question is whether a purchaser will buy that pipe and use it or disregard it and lay another pipe; if it disregards it and lays another pipe it has to pay the whole cost of the reproduction of that pipe, including the cutting through and replacing the pavement; it also has to pay various other expenses which are not included in the estimates that are made; it has to pay for changing the services, an added cost of doing this because of the paving that exists over them; the people who use the street and the abutters suffer the inconvenience of having an open trench that impedes traffic and interferes with their business for a certain period.

The cost of cutting through and replacing the pavement is only a part of all that may be added up as an advantage to the purchaser in buying the pipe in place in comparison with laying new pipe. So that taking it altogether I am clearly of the opinion that in considering the cost of reproduction as an indication of the whole value of the property that the cost of cutting through and replacing the paving as part of the pipe cost must be considered. But in a rate case under the rules that have been laid down I exclude it in this case.

In the same way I feel that a plant in successful operation, which is a going concern, is more valuable than a plant without such business. As a part of the whole value of the plant for the purpose of sale I should say that going value to the extent of one

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year's gross income certainly ought to be considered, but I have not included it in the rating base.

It sometimes has been said that a plant that was valued as a going plant when the cost of reproduction is estimated but it does not seem to me that that follows. Take the case of a plant that has just been built for a new service; it has not any business and it has not any going value. It is certainly worth the cost of reproduction. The difference between the going plant and the plant that is not going is something that comes afterwards, and when it gets it it is an added value. To take the other view of it, if you follow it backwards, is to reach the conclusion that if the plant did not exist it would not pay to build one, which certainly is not true of the conditions in San Francisco or other American cities.

In the matter of lands, I also make some differences between the value of the lands and the amount that is to be taken into the rating base, but I will discuss that in connection with the Merced lands and I will take that up next.

The manner of handling the Merced lands and rights equitably is one of the most bothersome questions that is presented. I have given my notion of how it should be handled beginning on page 16 of my statement. I take this up from four standpoints, namely:

A: Sale value;

B: Normal value as source of water for water works purposes:

C: Reservoir value of lakes for earthquake emergency insurance;

D: Additional temporary value in maintaining the supply pending the completion of the Calaveras works.

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In this, and in all that follows in regard to lands and rights, I am simply using the figures from the real estate men, and other water rights people, and I am not expressing, and I am not competent to express any opinion as to the value of land and rights in detail in this neighborhood. I have had a good deal of experience in acquiring land and rights for waterworks purposes, and I have some ideas in regard to a great many matters which may be reflected somewhat in the way I handled these matters, but I am not claiming to know anything about the value of land or water rights as such, in this district.

In regard to Merced, I considered first the sale value, and I include all that part of the area owned by the company draining to the lake, and with the lake itself, having a total of 2,575 acres, excluding all the Pacific Slope land. I mean by the Pacific Slope, the areas that drain directly to the ocean, and not to the lake. If this were less valuable land, I should not think of separating them and perhaps the separation is not very significant in this case; that is to say, when land is bought for waterworks purposes, it is very common at best to buy it to the natural boundaries of the parcel, and not

to split it along watershed lines. If the land was not very valuable, I think that is the proper course, to include all the land that naturally would be bought, and that actually was bought, if it were bought in a certain parcel. But when it gets to be as valuable as some of this Merced land, I thought it was fair to separate the part that did not drain to the lake, and exclude it from this consideration.

The appraisalment of this land, I understand, taken as of a time before the assessment of the Twin Peaks Tunnel, is six and a half million dollars. I am not quite clear whether that includes the water rights, or not, they are separately appraised at \$350,000. Whether it does, or does not include them, is not important for my purpose; I assume that it does, but I may be in error. The structures have some value in connection with this land for sale purposes. The works that protect the water from pollution would continue to protect the lake, and would add to its value for various purposes; they would also facilitate the drainage and sewerage from the population that might live upon the land when it was sold for building lots. Some of the pipe lines and wharves, amounting to about \$70,000, would have very little value, slight salvage value, perhaps, for the pipe line. I assume the worth of these structures for the purpose of the sale of the land to be used for other purposes at \$350,000. That is out of a total of \$463,000—estimated cost to reproduce, less depreciation.

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The Merced pumping station would have some value. Some use would be made of the surplus lake water, for irrigation, or otherwise, and the pumping station could be rebuilt to handle it, using the boilers, building, and some of the appurtenances. The filters might also be used. So I allowed \$75,000 for the Merced pumping station. The total estimate is \$175,000. I take the sale value of that part of the Merced property now used in supplying water as of December 31, 1913, to be \$6,925,000.

(Certain corrections noted in the transcript.)

8336-8338

I am taking up now the question, under the designation "b", page 17 of my statement, the normal value of the Merced supply for waterworks purposes. That is based on a consideration of what other supplies of water have cost, and are going to cost, and it has to be taken up in very general terms, and is only roughly approximate, and it may be less satisfactory for that reason; it seems to me, though, that because we cannot get specific information, and cannot make as precise estimates on this as on other matters, that that is no reason for excluding what certainly is a very important consideration in determining the value of the property as a whole. I have gone at it, using the information I could get, and applied it as seems best. It is a very general guide. The figure which I use as the normal figure for this water is \$700,000 per million gallons of capacity.

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The daily output I took at $3\frac{1}{2}$ million gallons. On that basis, the water would be worth at the Honda level \$2,450,000; from that must be deducted the capitalized operating expenses. I take the capitalized operating expenses into account in each case, because they differ a good deal for the different works, and it is not possible to get a fair comparison without doing that. I capitalized that at 6%, and they amount in this case to \$490,000, and deducting that, leaves \$1,960,000. That I take as the value of the Merced land structures and rights, so far as their value as a permanent part of the waterworks supply system, and having in view the capacity for delivering water only. That does not include anything else at all. For the purpose of division, it may be assumed that this is made up of \$638,000 of structures, that being my estimate, at \$1,322,000 for lands and rights. That \$638,000 is the estimate contained in my Exhibit 97.

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Under the designation "c" I take up the reservoir value. Lake Merced has a great value as furnishing a source of supply quickly available in case of damage by earthquake to the other works of the system. For this purpose, the amount of water available in storage is more important than the amount of daily yield. I might say that to some extent these two uses are incompatible with each other, because to get the maximum yield it is necessary to keep the water in the lake low. To get a maximum storage, it is necessary to hold the lake high, and when that is done, $3\frac{1}{2}$ million gallons a day could not be drawn; a good deal of it would go to the ocean by seepage. The two things cannot be added up; they are different elements of value that are parallel, but not cumulative. The storage could be increased by raising the lake to about 4 billion gallons. To make it available, a pumping station to pump 25,000,000 gallons a day through a 48-inch steel pipe, connected with the main supply mains, present or prospective, should be provided. That is not an absolute specification; it is just to give you a general idea of how it could be handled. The present works, pumping a small quantity of water to the Honda level, would not be very suitable to this use of the lake. It would require a much larger pumping capacity, and pipes to carry the water. The present pumping station would have to be entirely rebuilt to fit it for this service.

I estimate that \$1,000 per million gallons capacity is a reasonable estimate of the value of this use, including the lake and grounds necessary in connection therewith, and the rebuilding of the pumping station, and the pipe line. I take into account the fact that it would cost a great deal more than \$1,000 per million gallons to build any artificial reservoir that might be considered to take the place of this service. But if Lake Merced were not here, it would be necessary to have a great deal more reservoir capacity than exists in connection with this system, or that has been contemplated in any plan of

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carrying it out. To build an artificial reservoir to give this same service, would cost anywhere from \$2,000 or \$3,000 per million gallons capacity for a reservoir built in the cheapest sites that could be selected, up to somewhere from \$5,000 to \$10,000 per million gallons capacity for reservoirs that might be built on sites higher in elevation, and more centrally located, but not as economical for construction. I don't think that Merced has the same value that an elevated reservoir would have, and the same value should not be put upon it, but the general view that an elevated reservoir would cost a great deal more, is one of the things I take into account in reaching that conclusion.

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For this use it would not be necessary to reserve the whole area of the Merced land; 823 acres included in the city's former taking, and including the lake area, would suffice. The Honda works, now part of the system, would protect the water from gross pollution, and certain chemical treatments now available could be used for emergency purposes; that is, I would not ordinarily use Merced water at all; let it fill up and stay full, and if any surplus was available, which there probably would be, that would be available for irrigation of the grounds and parks in the neighborhood. In case of earthquake, a break in the lines out of the city, the Merced water would be brought into service in connection with the treatment by hypochlorite of lime, which would render the water harmless. It would not be very nice water, but it would be safe water, and it could be used until something else could be done.

Valued in this way, we have 4 billion gallons reservoir capacity, at \$1,000 per million gallons storage capacity, \$4,000,000. From that I deduct a rough estimate for the construction that would be necessary to make it available, half a million dollars, leaving the present worth of 823 acres, including the lake and drainage system as originally reserved, \$3,500,000, and that I believe is a conservative estimate of what Merced Lake is really worth to this community for this service. For the purpose of division, I assumed that that is made up of \$638,000 for structures, and \$2,862,000 for land and rights.

I come now to the temporary service value: For the last five years Merced has been an indispensable part of the Spring Valley system. Without it the supply could not have been maintained. Having it means that the Calaveras pipe line has been postponed for a considerable number of years. During this interval, the Merced works, with a sale value rapidly increasing from a much lower figure from the beginning of the interval, to about \$6,900,000 for December 31, 1913, and to an amount, including the Twin Peaks assessment, and the increasing value of the land, of at least \$9,000,000 in the year 1916, is devoted to the public service. That is my figure of \$6,900,000. The Twin Peaks assessment is shown on one of these sheets, \$1,639,000. It is to be presumed that paying that

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adds that much to the value of the property, and it is my assumption that it is undoubtedly increasing beyond that. The \$6,900,000 excludes the Twin Peaks assessment, which was \$1,639,000.

8343 Devoting it to service makes it possible to postpone for some years bringing into use the Calaveras system, the initial cost of the first installment of which will be larger in amount than the present sale value of the Merced property. Under those conditions as part of the rating base, it would seem that the Merced works have a special temporary value which should be taken into account in excess of their permanent or normal value, and by "normal value" I mean for waterworks purposes. No method of calculation presents itself to ascertain what this should be. The amount to be used is clearly greater than the amount to be assigned as its permanent value for waterworks purposes, and it would also probably be less than the full sale value of the property. Having these limits in mind, it seems reasonable to take Merced into the rating base during this interval for an intermediate sum, which I shall consider to be \$5,000,000. For the purpose of division, this may be assumed to be made up of \$638,000 for structures, and \$4,362,000 for lands and rights.

8344 The summary shows the results of the four methods of considering the matter the last of which is used in considering the rights during the interval from 1907 to 1914, the one under the letter "D", \$4,368,000. That, however, should be qualified; that is taken for the amount to be taken in for December 31, 1913, and not as applied for the whole period. The \$5,000,000 up above includes the structures. To keep the division between the lands and structures, which seems to be necessary, I have subtracted the structures from the \$5,000,000. It would be \$4,362,000, and it is that in the first statement. That is a very unusual situation in the waterworks business; I have met it very rarely, and it is a very difficult one to know how to handle.

It seems to me that the whole of the 2,575 acres is a necessary part of the land in use for supplying water for domestic purposes, and that no part of that should be allowed to go out of use as long as it is counted a regular source of supply. The object of that land is to protect the quality of the water. If there is any criticism to be made, it is that the company does not own enough; they really ought to own more to fully protect it, but that is what they do own, and with the drainage works and the tunnels, etc., to take care of the drainage that would otherwise go to it, it has been used and is used up to the present time, and it is all right to use it for the present, but the time is coming when it ought to be excluded from the regular supply, and when it does go back into the emergency class, and is excluded from the regular use, then I think most of that land ought to be released and used for other purposes; but for the present,

and as long as it is in daily use for domestic purposes, I think every acre of that ought to be held.

Questioned by Master.

That includes the land south of the drainage tunnel on the company's land, except that on the Pacific Slope, which is excluded. It does not exactly drain into the lake. Those drainage diversions take the bulk of the surface drainage; I don't think it is possible in that sand to get a complete diversion. While it holds the bulk of what otherwise would go into the lake, I do not think it is entirely to be relied upon. The idea of including all that land is to protect the supply. The vegetable gardens that are on there no doubt have a slight tendency towards polluting the supply, but that tendency is very much less than having houses built upon it, even with an adequate sewerage system, because there is so much less human population that goes with it.

8345

Questioned by Mr. Searls.

The sewer connections are never water-tight. I cannot speak in detail as to the construction, but to build the sewers entirely water-tight, if it could be done, would involve an expense two or three times as much at least as is ordinarily spent in sewers. Practically it is not done, and I have known only a very few places where it has been attempted. The sewers will leak into the sand, the sand is pervious, and the seepage gets into the supply because most of the supply there is underground water. The seepage may not be so small, but of course it depends upon how much the sewers leak, and they are apt to leak a good deal. There may be surface drainage; there are at times, though, heavy rains; of course these ditches were intended to divert that, and I suppose they do ordinarily, but still there is a risk in that, so that, in my judgment, no additional population should be permitted, so long as it is kept in use for domestic purposes.

8346

Questioned by Master.

There have been well authenticated cases of contamination of water in that way, in other systems. I don't think that the typhoid bacillus will come through that sand bank there, but other things do. For one thing, water draining a region of that kind will carry more nitrogen, and it becomes less desirable for domestic supply. It supports strongly, growths of organisms, and is less attractive. I think as a result of those conditions, the Merced water at the present time is not as good as the other water of the system. That is, it has more organic matter in it. The protection that is afforded by these outside lands is not against pathological germs so much, as the protection against pathological germs is rather a risk than a transference; that is to say, if you had a very heavy rain that washed the surface, it would wash out whatever dirt there was on the surface, and it might break some of the lines of defense. I don't know that

8347

it has done that, but it might do it. I should feel less comfortable using the water, knowing that the population back of those lines of defense was increasing too much.

If there were any typhoid bacilli washed into those lakes, the period of life in open water is not very long ordinarily, and the fact that typhoid germs had been washed in there might not cause an epidemic, but I should say it was getting pretty close, and I wouldn't want it. It might be that some of the water washing in would be near the intake, or would flow to the intake, and would be drained in, and trouble would come from it. That has happened even in reservoirs and lakes where the storage was large enough so that if it became thoroughly mixed, no trouble would happen, but where the polluted water coming in got near to the intake, trouble has come from it. The purpose of the hypochlorite is to kill the pathogenic germs. The hypochlorite could be used as a regular treatment, but it does not make very nice water, especially with water rich in organic matter like this; it produces rather disagreeable tastes and odors. The people would have to take it if the pipes were broken, and that were the only water available; but as a normal water supply condition, I don't think that ought to be followed.

8348

Questioned by Mr. Searls.

The hypochlorite is used very extensively in the East now for municipal water supplies. With waters that carry but little organic matter, it is often possible to use it in such quantities as to be quite effective, without causing much disagreeable taste and odor; there is usually some, even at best. That is the principal objection to hypochlorite, but when it comes to a water as rich in organic matter as the Merced water, the amount that has to be used is much greater, and the chlorine reacts on organic matters in the water, and as far as I know, it is impossible to use an amount that is adequate without making very serious and well-founded complaints from the users of the water. The hypochlorite could be applied to the Alameda water perfectly well, if there was cause for it, because that is pretty free from organic matter; it could be applied to the Peninsula water if there was occasion for it, very much better than it could to Merced, because that has much less organic matter. I have never heard of its being used to obviate the necessity of acquiring watershed lands to protect water supplies. The hypochlorite is used with the intention of having it act on pathogenic bacteria, but it also acts on organic matter; that is the secondary, and apparently unavoidable condition of its use.

8349

Questioned by Master.

The acquiring of large watershed area around reservoirs has been followed in quite a number of cases. I think that idea has had stronger hold on the Pacific Coast than elsewhere in the United States. Perhaps that has been because it has been possible to get them here, whereas, it was not so possible in the East. A number of Eastern

cities have acquired large catchment areas, and I think of Lynn, and Hartford, Conn. That has not been done in the New York water supply.

Questioned by Mr. Searls.

Referring to the Croton works; there is a permanent population of about 25,000 on the Croton Watershed of about 360 sq. miles. In the first place, every place that is sewered has some means of treating the sewage; sometimes it is taken off, but usually it is treated in some thorough-going way. In the second place, there are about 12 inspectors who live upon the area, and it is their business to know about everything that is going on on the whole area. There are regulations that are made and enforced, and anything that tends to pollute the water is cleaned up. The final line of protection is one that is not in effect yet, but which ought to have been in effect long ago, and that is the filtration of the water.

The conditions in the Catskill supply, which is just coming into use, are similar, except that the population is very much less. The principal population above the Ashokan Reservoir is made up of some summer hotels and camps; there are a few small villages that have an all-the-year-round population. It is a mountainous country, largely wooded, and very little permanent population. That is handled in the same way.

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In Boston the most important centers of population have been sewered, and the sewage has been taken entirely off the watershed areas through iron pipes, I think usually, because the sewers as ordinarily built are apt to leak; otherwise, it has been treated in the same way.

Questioned by Master.

You can build cast-iron sewers with lead joints just like water pipes, so that they are pretty nearly water-tight. I have sometimes built sewers that way, where they had to be built through a water supply.

Questioned by Mr. Olney.

8351

With reference to the New York water supply, the city always buys a wide strip around the reservoirs, and along each of the streams leading to the reservoirs; in case they cannot buy it, they condemn it. That has always been done with all water supplies. The character of the land within the watershed area that they acquire back East is that they are comparatively limited, first, to the reservoirs, and next, to the streams that lead into the reservoirs, and "by comparatively limited", I mean they are not along the banks of the reservoirs or the streams; the limits are not fixed, they vary.

8352

Questioned by Master.

Pollution is entirely from human excretions. It is not garbage. I think the danger of causing disease from garbage is pretty remote.

One would not like to think of it, and the throwing of garbage on the watershed ought to be objected to. It might possibly be that there would be no chance of pollution if the Merced Rancho were filled with dwellings, and it had an adequate cast-iron pipe sewer system, but the quality of the water would deteriorate; I don't think it ought to be continued in use that way.

Questioned by Mr. Searls.

I think it is all right to give the city the reservoir value as against earthquake damage; but as to getting a domestic water supply out of that, I don't think the city have any business to think of doing it; I don't advise the Spring Valley to do it. I advise them to give up the Merced as a source of supply just as quickly as they can get the water to do something else. I think that is what they ought to do. But in the meantime here it stands, it is part of the old works, it is filling a gap, it is carrying the company by a period that otherwise it could not have gotten by. It is very valuable property.

8353

Questioned by Mr. Olney.

The danger of contamination of the reservoir from surrounding lands is dependent to some extent upon the character of the soil which surrounds the reservoir, and to the climate. The sandy soil, such as we have out here at Merced, is favorable to maintaining the quality of the water, because it acts as a natural filter. If the soil about Merced had been clay, I doubt if it would have been in use today, the pollution that would have come from it would have been so great that it would have been forced out of service. As to the difference in regard to climate: The frost makes quite an important difference; when the ground is frozen the wash goes over the surface of the ground, and it is much more dangerous than when it does not. That is a condition favorable to Merced as compared with the Eastern supplies.

DIRECT EXAMINATION BY MR. GREENE.

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I take up first the Peninsula works, and try to find out the cost of the supply per million gallons of daily capacity, on the basis of my estimate, including the real estate figures which have come from others. I first tabulated here the amount of water which has been actually in use from these sources, averaging 20.4 millions per day. That includes the Crystal Springs, the San Andres, and the Pilarcitos Reservoirs. There is no way in which these can be conveniently separated, and there is no object in trying to make the separation. The capacity of the whole system, as measured by past experience and dry years, is 19,000,000 gallons per day. For the years under discussion, the output has averaged 20.4 million gallons per day, exclusive of some small amounts furnished in San Mateo. These figures have been taken exclusive of that. It is evident that even more than this quantity can be used during the next few critical years until Calaveras is built;

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that is to say, with the reservoir substantially full at the beginning of 1916, and with the large storage that is necessary for two or three years, 22 or 24 million a day, perhaps, could be drawn from this system. For the purpose of this discussion, 20,000,000 gallons per day will be taken as the normal capacity. The property serving to furnish this water, and to deliver it in the city, is made up as follows:

Peninsula works, estimated cost to build, less depreciation..	\$7,048,000	8355
Roads, Peninsula system	100,000	
Fences, Peninsula system	26,000	
Telephone lines	14,000	
Electric transmission line	6,000	
	<hr/>	
	\$7,194,000	

I think these estimates, after the main one, are agreed figures, except that I did not have subdivision between the different works, and I approximated that. It totals \$7,194,000.

That includes all the pipe lines from Crystal Springs and San Andres to the city. The Alameda water also goes through these same pipes. I tried to separate the part of those structures that should be assigned to the Alameda water. This is an approximate division, and I considered the amount of water and distances, and it is not very far out. I took \$1,000,000 that should go to the Alameda system. You will find that is an item in the cost of the Alameda system when we get to it, so, making that subtraction, it leaves \$6,194,000 of structures on the Peninsula works.

Now as to land: We have 2,740 acres of reservoir lands; 17,901 acres of watershed lands, taken to the old property lines nearest approaching the watershed lines, and including about 1,000 acres outside the divide, being an undivided part of the parcels. This classification of lands was made at my request, and following a rough classification which I made myself, and which is shown by a map, on which the properties in use are shown in red, and the properties excluded are shown in green. That is true throughout. The property shown in green, the company consents to the exclusion of with reference to rates that are passed up to 1913.

(Map of Spring Valley Water Company's properties in use, Allen Hazen, introduced and marked "Plaintiff's Exhibit 165").

The Locks Creek properties were excluded, and also a few parcels on the Pacific Slope that do not contribute to the supply, which were large enough and compact enough so that it seemed reasonable to suppose it might be sold separate from the properties with which I suppose they were purchased. There are two ways of getting land for water supply purposes: One is to draw a line around the land that is needed, and to buy to that line, and if it is not possible to buy,

to condemn it. Following that system results in acquiring a minimum acreage, but it also often results in a pretty high price per acre being paid. The other system is to buy property to the property lines as they are, and to buy it when it is for sale, and sometimes buy parcels not needed entirely or directly, and buying land in that way as the opportunity presents, more acres are bought, but the price per acre is apt to be less, and it is often the case that the whole amount that is needed can be bought for less money by following the second method than it would be possible to obtain it for under the first, and the two methods are commonly employed at the same time in different systems; sometimes one is employed exclusively, and sometimes the other. The Spring Valley has ordinarily followed the second method. It has bought land when it could, and without dividing the parcels or holdings, and in that way very frequently parcels outside have been bought in connection with others. In this separation I have not thought it was best to go into minute detail. If land was part of an acreage that had been bought, other parts of which were useful, and some of which hung over the edge, and was not useful, I have not made the separation. On the other hand, if there were large tracts of land that had been acquired in that way, or acquired perhaps for some other purpose, and did not contribute to the present supply, and that land is available, and in a unit so it could be sold, I have marked that.

8358

Questioned by Master.

Referring to the green right of way by Dumbarton Point; I think there are two rights of way there, the red one in use, and the green one not in use, and the red one is included, and the green excluded; through the Ravenswood line the company has large holdings, and the pipe goes through, and there a purely arbitrary separation was made; the land is not very valuable, and I assumed that a certain amount went with the pipe, and that was pro-rated, and the rest was excluded. I do not know that this map shows accurately all the details; it was made at my request, on my classification, to make sure that I had not made any error on the main items.

8359

(Lands in use, out of use, reserve, as of December 31, 1913, introduced and marked "Plaintiff's Exhibit 166").

8360

DIRECT EXAMINATION BY MR. GREENE.

The next item is for the Millbrae Pumping Station; this is the lot, 15 acres, \$23,000. Without reading the amount, the Millbrae standpipe, and the Silva Tract, which is the area between Millbrae and the San Andres Reservoir, around which the present pipe comes, and on which future pipes may be laid, and some land at the Baden Trestle, and Abbey Homestead, and the Baden-Merced right of way, and Crystal Springs land at Baden, bought in 1907 for protective purposes, that I took at cost; that is on soft ground where it was

feared that adverse use would undermine and endanger the pipe line, and that was bought to protect the pipe; the company, I think, had a right of way only prior to that time, that is, did not own the fee of the land.

This Parcel 168 was appraised at more than this figure, but as it was bought during this period, I substituted the cost for the appraised value. Then there are a few small items in the last item for additional rights of way, no estimates being available—I had no estimates on the rights of way at all, and it would have been more satisfactory to me to have had figures for these, but I have had experience getting rights of way for pipe lines, and I know that a great deal of money may be spent in doing it, and so I wrote in some figures here, just so it would not be overlooked; they ought to be disregarded, and real figures substituted when they are available. That adds up for the lands \$6,406,000.

8361

The water rights—I am taking this figure from those figured on water rights, as representing their judgment, and not necessarily mine—20,000,000 gallons per day at \$100,000—\$2,000,000; to that I add the capitalized operating expenses, amounting to \$80,500 per annum, at 6%, \$1,340,000, making a total of \$15,940,000 for 20,000,000 gallons of water per day delivered at Honda. Honda is taken as the type of the city to make it definite; I could have made it one of the other reservoirs just as well, but the Honda is the place where most of the water is delivered, so they are all figured on that basis. The \$100,000 is intended to be an appraisal of water rights which was given to me. It is not intended as my opinion of the value of water rights. That amounts to \$797,000 per million gallons of daily capacity, as against the \$700,000 which I used for Merced.

8362

I next take up the Alameda works in the same way. These include the Sunol and Pleasanton sources, and the Alameda pipe line. The Sunol works furnish more water than can be used during the wet portions of the year, and a much smaller amount in dry times. The Pleasanton works come into operation when the Sunol supply falls short. Two auxiliary pumping stations at Pleasanton help to maintain the supply at the end of the dry season.

Calaveras water can be used through this works, if desired, but as all the water that the pipes will carry is now available from them, and will still be available after the Calaveras Reservoir is completed, such use is not contemplated, except for emergencies. That is to say, in any extraordinary dryness, or any failure of the Pleasanton works, for instance, Calaveras water could be let down, and taken in at Sunol through the galleries, and the full capacity of the pipe maintained as an emergency. There would be no object in doing it ordinarily. The Alameda pipe line will normally carry about 16,000,000 gallons per day; its capacity has been increased to 21,000,000 gallons per day by the Ravenswood Station, but at the cost of rather heavy operating

8364 expenses. The amount of water used from this system, by years, has been as follows, averaging for eight years 15.3 million gallons per day, but increased to 18.3 in 1914, and 20½ in 1915. The figure of 21,000,000 gallons per day was subsequent to 1913.

This table gives the daily outputs, and the other the capacity. You will see for 1915 the daily output comes extremely close to the approximate capacity.

8365 The structures, lands, and rights of way of this system are as follows, the structures including the Niles Aqueduct, \$4,112,000; that is from my Exhibit 97; the pipes taken out of the other system, \$1,000,000; the roads, \$28,000; fences, \$58,000; telephones, \$15,000; transmission lines, \$5,000—a total of \$5,218,000. In a way, all of the Alameda land above Sunol contributes to this supply, but for the purpose of this discussion, I have only taken certain parts of it which are here listed: The Belmont Pumping Station, the Ravenswood Pipe Line, that being a part of the large Ravenswood Tract owned by the company, and separated arbitrarily by myself, and charged pro rata to this service, the right of way Newark, the Pleasanton Wells land, the Pleasanton Tract, and the Pleasanton riparian lands, being the lands along Laguna Creek, between Pleasanton and Sunol necessary to control the rights. That is to say, the owners of this land, if it was adversely held, would have the right to object to the withdrawal of water at Pleasanton and Sunol Gallery lands.

On page 29 there is another table, in which all the lands in use are summarized, and by referring to that you will see that the Sunol Galleries comprise 5,573 acres, and this "Exhibit 166" will give you the parcel numbers, the acres and the amounts for each one of those. I have boiled this down a little for the purpose of this table, but I intended that the whole details shall be here; a total of \$2,740,900 for lands.

Questioned by Mr. Searls.

8366 The Pleasanton Tract consists of the ranch lands, and they are the 4,658 acres which cost the company \$1,545,800. I took the cost of them, because it was bought in the period in question. I did that with several of these parcels where the purchase was recent. I do not want to express any preference in general principles for cost over value, because I do not think it ought to go in that way. I think the value is controlling, but where they were purchased so recently as this, and the amounts were known to me, I thought that was the amount to use. The appraised value as given to me was higher; the difference was not very great. Now, for the additional right of way I had no information, and I put in a substantial figure which I have not any basis for. You will have to substitute somebody's figure for that when you get it.

Questioned by Master.

When I say additional right of way, I do not refer to some right of way not now owned. I refer to the rights of way which the company owns, which either have not been appraised, or the appraisals of which were not available to me. If nothing is shown, nothing should be put in. It is just to cover what seems to me should come in, and the amount of which I don't know.

For the water rights, I take as a starting point 20,000,000 gallons per day. There may be some discussion as to just what that amount may be, but in view of the figures given on the preceding page, I thought that 20,000,000 was perhaps a fair starting point, although during the earlier part of the period the capacity of the works was only 16,000,000 gallons per day, and that ought to have recognition, and I think it does have recognition in the further treatment that I shall give this figure. At \$100,000 that is \$2,000,000. From that I deduct my Niles Aqueduct structures. The Niles Aqueduct represents structures to supply water to some of these people who gave up their rights in consideration of being supplied with water, and as I understand it, that aqueduct has to be maintained by the Spring Valley Water Co. for it to do business, but it is not connected with the system in any way, and does not contribute to the direct supply of water. So I have considered that Niles Aqueduct as part of the water rights, and I have subtracted it from the \$2,000,000, leaving \$1,852,000. The Spring Valley Water Co. built a reservoir for Mrs. Hearst, at an expense of \$8,000 or \$9,000, on her land, and which she owns, in consideration of her not doing some things, and I think that expenditure is part of what the company has paid for water rights. The reservoir was listed among the structures of the company, but they built it for Mrs. Hearst, and she owns it, and I do not include it in my structures; I think that should be recognized in the water rights.

8367

Then I add the capitalized operating expenses, which are heavier for the Alameda system, amounting to about \$30 per million gallons, and capitalized at 6%, \$3,290,000, a total for this supply of \$13,400,000, which is equal to \$745,000 per million gallons daily output of 18,000,000 gallons daily. The works are now capable of supplying 21,000,000 gallons except in very dry times, but they have not been capable of that capacity during the whole of the period under discussion, and an approximate rate of 18,000,000 gallons is used. That calculation is \$30 per million gallons, 18,000,000 gallons per day, 365 days in a year. That is not the adjustment from 20,000,000 daily that I referred to a little while ago, that is the operating expenses; it all comes under capitalized operating expenses, and I just wrote that in so that I could easily check the calculation. It does not come into the last column. It is a detail for the \$3,290,000. That is, we have a pumping lift in the first place, about 580 feet, costing about \$23.20 per million gallons and in addition a low lift pumping for part of the

8368

water only at Pleasanton, amounting to about \$1.80 on the whole amount, and general expense of supplying water about \$5.00, a total of about \$30 per million gallons; then, multiplying that by 18,000,000 gallons per day for the 365 days in the year is \$197,000 per annum, and that is 6% on \$3,290,000. This comes out \$745,000 per million gallons daily output, in place of \$700,000, which I used at Merced, and \$797,000 for the Peninsula. This carries the water to Lake Honda. The million dollars allowance on the pipes, gives the pipes into the system, and the pumping expense was figured on the whole lift to Honda. Of course it is true that all of the water does not go to Honda. That is true of all of these supplies, but I figured the pumping expense as if it were all pumped to Honda.

8369 I next come to the probable cost of water to be obtained at Calaveras. This is in the future, and perhaps involves greater uncertainties than the discussion of the works that have been built, where we have the inventories of the structures. I have first the cost of building the reservoir complete at \$3,000,000, of which \$1,170,000 have already been spent, and the rest of which is my own estimate of the cost of finish, and to build the overflow, but not including the outlet tunnel, or the diverting works from Upper Alameda Creek; then the estimated cost of pipe line and aqueduct, 67 miles long to Honda, the tunnels and aqueduct having a capacity of 60,000,000 gallons per day, that is, to provide for the full ultimate capacity with twin pipes, one only at first, in first installment with a capacity of 30,000,000 gallons per day. The pipe is the heaviest part of the expense, and that is built for 30,000,000 gallons per day, and the rest for 60,000,000.

These pipes and tunnels will have to have some excess capacity for two reasons: There is always, normally, an excess capacity to provide for contingencies, and to meet peak loads; that goes through all ordinary waterworks construction. It is temporarily reduced, almost eliminated in the Spring Valley system, but that is not a normal condition, and the excess capacity is a little greater here than in a normal system, because of the excess cheap storage available on the Crystal Springs site, which will come into use in the future with the full development of this system, and to utilize this, it will mean that in wet years somewhat more water will be drawn from Calaveras and the other sources in Alameda, and in dry years somewhat less will be drawn from these sources, and somewhat more from Crystal Springs, and in that way the Crystal Springs supply, with its greater storage, will be conserved in wet years, and made available in dry years. That will increase the capacity of the whole system, but it requires a little more pipe capacity between the two parts to make it available. So it is made with a capacity of 60,000,000 million gallons per day, in comparison with which the average maintainable output of the Calaveras Reservoir alone, on the best information that I have, will be in the

neighborhood of 45,000,000 gallons per day; that gives a one-third excess capacity, which is not too much. In my judgment this aqueduct is as small as ought to be built at this time, 30,000,000 gallons per day capacity.

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That will take care of growth for quite a number of years at the present rate of growth, and I think is as far as it would be wise to anticipate growth at this time. On the other hand, ordinarily, considering the lack of reserve in the present pipe of the system, it is anticipating as little growth as it would be safe to anticipate. If it were built smaller, the chances are that the second line would have to come on so quickly that there would be undue loss in investment because of that. I have taken reservoir lands, \$385,000; watershed lands \$432,000; riparian lands \$63,700,—the riparian lands being the lands between Calaveras and Sunol which the company could not afford to have in adverse ownership with the Calaveras Creek going through them. I think these watershed lands include the Upper Alameda. My thought is that these are the land on the stream below Calaveras, the owners of which, if anyone else owned them, could get an injunction preventing the diversion of the Calaveras waters. It may be that they should be considered as water rights, and that may be true of Niles Canyon lands. The Calaveras riparian lands, 2,251 acres, \$63,700, are the lands between Calaveras and Sunol.

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I classified the lands, and then the schedule was made over and checked up. I made the schedule in the first place approximately, but it was checked up, and the Calaveras Reservoir and watershed lands include land occupied by works both at Calaveras and Upper Alameda, proposed connecting tunnel and conduit, and all land on the catchment area back of the intakes, and then the riparian lands include the lands below Calaveras Dam. The adverse ownership of which might interfere with or prevent the diversion of Calaveras water. Those appraisals were furnished to me, and are an average of Messrs. Gale and Schween, the company's witnesses.

8372

Questioned by Mr. Olney.

I think the riparian lands on Alameda Creek, below the intake, and above the point where the Alameda Creek flows into Calaveras Creek are included in this statement.

Questioned by Mr. Searls.

I include the Upper Alameda Watershed because it is a part of the Calaveras development. It comes in the second installment, but the whole of the land, as far as these items are concerned, for both installments, is covered by this estimate. To that I add a nominal allowance for right of way for aqueduct not yet bought; no estimate has been made for that, but it is a long line through valuable property all the way, and I put in half a million dollars for that, altogether approximately 50 miles to be bought; that makes \$1,380,000,

8373

and the water rights of 25,000,000 gallons per day at \$100,000, two and a half million dollars; operating expenses capitalized at 6%, \$920,000, total \$15,905,000 for the first installment, which is equal to \$635,000 per million gallons daily capacity.

Of course, this calculation is bringing the old Calaveras property, which the company has held a great many years, into this calculation at a certain nominal figure, and what that property is really worth is a matter for discussion. I don't know that these figures ought to be taken as representing the full value of that property to the company, in view of all the time that it has been carried, but I have taken the figures of the real estate men as they came to me, and have put them in directly, and this turns out to be somewhat cheaper than on the first installment, and on this calculation, than the other sources that we have considered.

On the second installment at Calaveras there are too many uncertainties to permit of any estimate being made that I am willing to use. I simply put a few notes in regard to it, and things that will be involved in its construction. There are uncertainties, both in the cost, and as to the amount of water that will be available, because I could not assert—I would not be surprised if it would be necessary to build either San Antonio or Arroyo Valle, or both, to protect the Sunol works, and cover outstanding riparian rights, before all of the Calaveras water could be diverted; so I think that is too speculative to be of any use to it. The next is an estimate of the cost of water from an outside source, from the Sacramento River. I had the estimate brought up to Honda, and it turns out to be \$700,000 per million gallons of daily capacity.

The estimate which I made while in the employ of the City was only for a capacity of 60,000,000 gallons daily from the Sacramento source.

I did not go into this Sacramento River matter in much detail. The estimated cost of land and works, with a maximum capacity of 66,000,000 gallons per day, capable of the ordinary maximum output of 60,000,000 gallons daily was 24,000,000. I would say at this point that the reserve ratio between 66 and 60, in my judgment, is not large enough for any system of this kind, but I was instructed by my employers to report on that basis, and I conformed to instructions; but with 66,000,000 daily maximum capacity, it would never be possible to actually sell 60,000,000 millions per day; there is not reserve enough. This estimate provided for delivery of water in San Francisco at about sea level down near where the ship building establishment is at the present time, near the end of the Point. From this point it would be necessary to lift it to the Honda level to make it comparable with the other estimates; a pumping station capable of lifting it would cost about \$3,575,000, making a total of \$27,575,000. The above includes the engineering and contingencies, and ad-

ministration, but not interest during construction, and to make it uniform with the other estimates, and to cover the total cost until the works were ready for service, I have added the same percentage that I have used in the other estimates, 12%, and that brings the total to \$30,800,000, and then the operating expenses, \$17 per million gallons outside the city, and pumping from sea level to Honda, \$13.70, a total of \$30.70, or about the same as the operating expenses on the Alameda works; 60,000,000 gallons per day, capitalized at 6%, \$11,200,000; total cost, including capitalized operating expenses, \$42,000,000, which is equal to \$700,000 per million gallons daily capacity. My first estimate included just bringing the water inside the city limits, and none of the estimates include the distributing system; they are intended to be strictly on the same basis. The basis for this estimate, which was made some years ago, may differ a little from the estimate that I am making for Calaveras; if there is any difference, it is not very wide. I think I have assumed \$3 a day when I made this estimate, and it may be that it is a little higher because of that assumption as compared with \$2.50 a day, which I have been using in the other estimates.

8376

ONE HUNDRED AND FIFTEENTH HEARING.

MARCH 14, 1916.

Witness: ALLEN HAZEN for Plaintiff.

(Counsel for Plaintiff offered an explanation of his statement, as made on page 8356, in relation to what lands should be taken as in use, or as actually contributing to the supply, as indicated on the map introduced through Mr. Hazen. A discussion on lands and structures in use and out of use ensued among Counsel).

8377-8379

(Certain corrections noted in the transcript).

8379-8383

(Ruling in re "rate of return").

Witness: ALLEN HAZEN for Plaintiff.

8383

DIRECT EXAMINATION BY MR. GREENE.

Mr. Searls asked me yesterday about my estimate of a 400,000,000 gallon plant for the Sacramento River, and I told him I made no such estimate. My estimate was for 60,000,000 gallons per day only. In looking at my report, dated November 4, 1911, I found that the 60,000,000 gallon plant, for which I made an estimate, was considered as the first installment of a much larger plant to meet remote future conditions, and the more permanent parts of the works, especially the tunnels, are made of sufficient size to serve three units of the size of that first constructed of a capacity of 200,000,000 gallons a day. To that

extent I was in error in answering his question, and I am now glad to make the correction.

8384 Taking up page. 27 of my statement, cost of water from the Sierras; the proposed line for Tuolumne water goes through the San Antonio Reservoir site, now owned by the Spring Valley Water Co. This is at the same distance from the city as the Calaveras Reservoir. It is 67 miles from Calaveras to Honda by the route that seems to be most promising. The city's proposed Hetch-Hetchy route is considerably shorter; that takes a short cut, and follows up the state road substantially while a longer route going on higher ground, and especially along the Spring Valley property here, permits the construction of a gravity concrete aqueduct for a long section. While it is quite a number of miles farther that way, it is a better, and ultimately cheaper route than the route following up the state road. It is very likely that the city in considering it, did not consider it available, because it went through a good many miles of Spring Valley property. From my standpoint that is no objection, it is rather an advantage. It is my personal judgment that when they build the Tuolumne line, the city will do well to follow this same variation, and build a longer line. They will meet fewer obstacles, and they should also build a concrete aqueduct at that part of the line instead of a pipe line. It is cheaper construction there. The extra miles don't mean extra trouble; it is the reversal of that.

Questioned by Mr. Searls.

8385 My exhibit says "San Andres Reservoir", but I meant San Antonio. My understanding is that the proposed line was at the grade of the reservoir, and was to be connected with it. It goes under the Arroyo Valle, but the intention was to connect it with the San Antonio, as I understood it. I don't think that point is very important to our present discussion. The main point is that it is 67 miles from Calaveras to Honda by this longer and more promising route; it is 110 miles from the early intake on the Tuolumne to the proposed San Antonio Reservoir; it is a further distance from the source to the early intake, but the early intake was the point where I understood the water was to be first taken, and so I have used that distance. From San Antonio Reservoir to the city the route is substantially the same as the route from Calaveras to the city. Here in Calaveras and here in San Antonio, the distance and the difficulties from the two reservoirs going forward are substantially the same.

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The cost of the Tuolumne Aqueduct, other things being equal, will be in proportion to the length. On this basis it will cost nearly three times as much as the Calaveras Aqueduct, that is, it will be three times as far in. The cost of collecting water at the source and making it available may be less relatively for the Tuolumne, but the distance will not greatly affect the whole cost of the projects.

The amount allowed for water rights and land at Calaveras may also be greater relatively.

Looking at the matter broadly and without attempting any detail for similar quantities the cost of bringing Tuolumne water to the city would be more than double that of taking Calaveras water to the city, that is, it would be three times for the aqueduct, and allowing for all other differences that there may be it will cost twice as much. I don't make that as a precise statement but only in very general terms.

The fact that a large supply of Tuolumne water might possibly be brought in at some future time at a lower cost per million gallons is not of significance because there is no market at remunerative rates for such a quantity at the present time. The comparison if made ought to be limited to the quantities of water for which a market may be found within a reasonable length of years, and limited in this way Calaveras is much cheaper than Tuolumne water can possibly be. I simply give that as a reason for not going into any Sierra discussion further; I think it is an adequate reason.

Now, all this discussion simply relates to that \$700,000 per million gallons of daily capacity which I used at Merced. I think the discussion shows the basis that I used in getting at it. It has also served to give me a base for judging whether the amounts assigned to the several sources of supply were reasonable; that is to say, if the Peninsula works cost a great deal more than the Alameda works, or if there were very wide discrepancies of any kind, perhaps they ought to be adjusted in some way because it is not possible to sell water in the same system from two sources at different prices.

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Looking at it broadly, other things being equal, the various sources of supply will have actually the same value. For instance, in the New York City system, the Croton supply, built a great many years ago, has a capacity of about 300,000,000 gallons per day, and cost perhaps \$75,000,000. The city has just been building a new supply from the Catskill Mountains, and the first installment of that has a capacity just about equal to that of the Croton, 300,000,000 gallons per day. Of course, there are differences that ought to be taken into account, like the operating expenses; but ignoring that for the moment, the cost of the Catskill works is enormously greater than the cost of the Croton works but the two sources of supply deliver the same quantity of water, of quality that does not differ very widely, and looking at it broadly one of those systems is worth just as much to the city of New York as the other; and if we were valuing these works, that would have to be adjusted in some way; the Croton works is just as valuable as the Ashokan; the Ashokan is worth just what it cost. On the other hand, the Ashokan is not worth any more than the Croton.

Frequently, in valuing old plants with many sources of supply it is necessary to take those things into account and to say that notwith-

standing the schedules which may be made as the result of estimates of reproduction and land, as sources of water supply they are actually worth amounts which are quite different from those which are reached by adding up the estimates of reproduction and of the lands and rights.

Questioned by Master.

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I don't know that there is any fixed rule in reaching my figure of adjustment; I think all the circumstances would have to be taken into account. I should look at it as something of a market where there were a certain number of sales, some higher and some lower, and the question is, what is a fair price in view of those sales, taking into account all the conditions that there are. I don't think I have reached a point where I can formulate it and say that any rule always applies. The market is an important matter. If you would ever get a water supply where there was not a market for it, it would not have the corresponding value.

If a market demand existed, the cheaper supply would necessarily be cheaper in value to the more expensive supply. If you can conceive of New York City in the interval of building a new supply, suddenly doubling its market for water, then the Croton supply would be as valuable, and would have to be rated at the Catskill supply; if, on the other hand, the market for the Catskill supply was not there, then that would tend to look toward a lowering, and an adjustment between them. That is the idea I have in mind.

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It seemed to me that in relation to the Merced, this line of treatment was necessary to do justice to the case, but in regard to the Peninsula works, and the Alameda works, I do not feel there that anything can be done with it to advantage. It seems to me that the value of the lands in the Peninsula works, and the rights, as they have been valued in this case, have reached the point where the system as a waterworks property is valued for about all that the market will stand. I should say that if the land, for instance, doubled in value in view of the general situation, that as a waterworks property, the price taken into the rating base ought not to go up in proportion, that is, in view of the cheaper water from Alameda, and the possibility of other water being brought into the market. It seems to me the Peninsula works have pretty nearly reached that point at the present time. The Alameda works show somewhat less estimates; I do not feel that they have quite reached that point. Taking it altogether, it seems to me that the indications, which are necessarily in very general terms, do not warrant revision of the estimates on the Peninsula-Alameda works at this time, and I have not attempted it. So far as Merced is concerned, I think the matter is a vital one.

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I will now go to the lands on page 29. This list shows the properties that it seemed to me were in use, and ought to be included in

the rating base, and the amounts set opposite the items are those which are reported to me as the average by the real estate experts—on behalf of the company—estimates, except where I have noted costs, and that relates I think only to items purchased during the period. The city properties include the sites of the various reservoirs, and the pumping stations that are in use, amounting to about 90 acres, valued at \$1,015,000. The Merced lands to the extent of 2,575 acres are included, and the correction which was noted yesterday should be made there also. It should be \$4,362,000, and that will follow in the additions; below it will be \$15,728,246, and below that it will be \$20,078,246, and then again the 78 in place of 84. I expect some minor discrepancy will be found in this work. I tried to get it correct in the main items, but I have not been very particular in carrying the calculations out to the last point.

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Mr. Searls: On this Millbrae stand-pipe lot we have a suggestion that something less than the total value shown there should be allowed to it, in as much as the only structures for which that lot is used are a small stand-pipe, reservoir pipe line, and the Millbrae stand-pipe. It seems a very large investment for a small purpose that might be served by a much narrower strip than the company actually bought.

Mr. Hazen: I should say in regard to that, Mr. Searls, that to have bought a smaller strip it would undoubtedly have been necessary to condemn it, and that the cost of condemning a small strip out of a large tract very likely, and from my experience probably would have cost as much as the fair value of the whole tract. I don't remember the width of that tract, but I think it is several hundred feet. My impression is that one pays pretty well for 100-foot strips through land, and that anything less than 100 feet costs as much as 100 feet.

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I think the same statement would apply to your same criticism of the 60-acre tract on the Baden-Merced right of way; of course, that is a matter of judgment as to how far one is warranted in buying lands without splitting the parcels; if those properties had been trimmed to take only the amount that is actually and immediately required by the works, it would have meant cutting the properties on other lines than the lines on which they were owned, and the cost per acre would be very greatly increased.

Mr. Searls: Q. What do you think of this suggestion—that where the company owns property that conceivably has a considerable residual use for other purposes than water supply purposes, the company should not charge the rate-payer with a full burden of return on the entire cost or value of the parcel, but rather upon such proportion of the cost as is properly attributable to water supply purposes. I do not wish to be understood as going too far in that, or being too unreasonable, but Mr. Olney has suggested in the case of certain lands which have very little real estate value in the Niles Canyon, that a

8394 riparian rights value, and a right of way value, would be the way to measure those. If that is the case, it is more or less immaterial what area of tract is taken out for a rate case; it would be a question of how much value should be allowed for that purpose.

Mr. Hazen: A. You have qualified your question, Mr. Searls, by saying you do not want to be unreasonable; with that qualification I entirely accept it. I think it is entirely a question of what is reasonable; it is a matter of judgment.

I think there may be some possibilities here and there where it would be entirely possible for the Spring Valley Co. to sell off a considerable area from all of those tracts, and still preserve all that was needed, and get a very handsome remuneration, probably for what they did not need; as far as they can be definitely shown, I would be disposed to consider them. In regard to the Baden land, I think my understanding is that that is at a place where there has been trouble with the line, it is a point of special danger from earthquakes. By the Baden land, I mean the tract appearing here, containing 60 acres, and having a cost of \$54,000, and ordinarily described as the South San Francisco Tract. It is Parcel 168. That is the University Mound line of the Crystal Springs Reservoir. As I understand that, it was a marsh land where there has been trouble with earthquakes, and it was proposed to build some structures adjoining the pipe line, and it was thought unwise and undesirable to permit that to be done, and the land was bought so that it could be kept open to protect the safety of the pipe.

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Mr. Metcalf: The map shows a portion of that tract indicated in red, and the borders of it indicated in green; it is my impression that the reproduction cost of the entire property was greater, and we took a portion of it. As a matter of fact, we took the cost.

Mr. Olney: The various witnesses for the company valued it, as I remember it, at \$1,500 an acre. That would make about \$90,000 for the tract.

Mr. Metcalf: It was Parcel 168. The value exceeds the cost considerably; we took the cost. The out of use property I think was something like \$18,000 more.

Questioned by Mr. Searls.

Mr. Hazen: I have excluded from these figures the property on the Locks Creek watershed, and also the West Union lands.

8396 The Ravenswood right of way, which I have here, is not what is known as the Ravenswood-Belmont right of way. This is part of a large tract of Ravenswood land. There is no claim made that the main tract is in use, but the pipe goes through it. I drew a line which represented my idea of what might be claimed in use. That is, what the company might reasonably have bought for the pipe line, and it in-

cluded the land between the pipe line and the Southern Pacific Railroad, because it is not very valuable, and I think the company would have wanted to own that in connection with the pipe line, if there had been no other use for the land. That all amounted to 106 acres, and the value is \$13,500. That was pro-rated in some way. The right of way referred to by Mr. Searls is excluded. This right of way that I have there is a right of way that is now actually occupied by a pipe line. Mr. Searls might say that 106 acres is too much to allow for a right of way; I cut it off, and I cut it off liberally. That land does not run into much money down there.

Questioned by Mr. Greene.

The Locks Creek property had not contributed any water during the period in question. What the status of it may be legally, I don't know. Practically there were some landslides that would make it very difficult at this time to rebuild the line within reasonable limits of expense; it has not been rebuilt, and I marked it off from this consideration; whether it will ever be rebuilt or not, I don't know.

8397

Questioned by Mr. Searls.

I gave all the West Coast sources consideration in connection with my future development schemes, but the water which might be obtained from them is not included in my 100,000,000 to 120,000,000 gallons daily. When I consider it, I did nothing as far as the matter that I am presenting is concerned. I simply informed myself in a general way as to what was over there, and what could be done with it. There are something like 50,000,000 gallons per day of very excellent water that could be connected with the system and brought in that way. I think that the estimates that have been made as to that system by various people hardly do it justice. I think it is a better source of water supply than it has been given credit of being. The company owns only very partial rights. It has bought some property and water rights, and a great deal of land, but it is only a beginning of what would be needed if it were secured. No claim is made for it in this case. The city has decided that it does not want it; it does not even want the property that the Spring Valley owns over there, and I presume it will never be used, but it is a promising possibility for some 50,000,000 gallons of good, and not very expensive water.

The next item is the right of way to Newark, \$24,000, following the Alameda line right over. The land west of the bay is 106 acres, and then the land east of the bay is 109 acres. That is the Alameda pipe line right of way actually in use.

8398

The Calaveras Reservoir land includes the Upper Alameda Creek. I did not feel like separating those. It is all one property, and it will all be used. I mean that the Upper Alameda Creek watershed will be tributary to the Calaveras Reservoir; I don't think anyone would be

8399 justified in building the Calaveras Dam without owning the whole of that property. It is true it won't contribute to the Calaveras water until it is diverted, but I have the feeling that a reasonable reserve connected with the property is part of the property. There is not any waterworks structure you build absolutely for present needs. If you are laying a pipe in the street, and you look ahead for a certain distance in the future, you lay a pipe to meet the present needs, and the immediate needs will be fully served with a 6-inch pipe, but you lay an 8-inch pipe; the difference between the 6-inch pipe and the 8-inch pipe, in a certain sense, is reserve property. If you build the Calaveras pipe line, you want a certain quantity of water, but you don't build the pipes for that quantity, you look ahead for a little, and build a pipe for the quantity that will be needed a few years hence. That is the ordinary prudent way of doing it.

When it comes to lands it seems to me it is the same thing, the upper Alameda lands are part of the Calaveras property; they are necessary in the full development. If the Spring Valley Water Company were to go ahead building the Calaveras Reservoir without owning them, some speculators would go up there and buy them and it would be a very unfortunate situation. It is obviously much better to get them in advance and hold them. As long as the amount is not unreasonable with respect to the whole business it is my judgment that they are a part of the property. So I did not make that separation at all.

The Calaveras riparian lands, as I have it marked, 2251 acres is land below the Calaveras Reservoir, and also I think the Alameda Creek below the future intake and not included in the Sunol lands. It is above Sunol. If it was not classified as it is in this statement it would be classified as Sunol watershed lands.

The next items are for San Antonio Reservoir land and for San Antonio watershed lands and for the Arroyo Valle Reservoir lands and watershed lands. In making up the list of the Arroyo Valle lands I included a few small parcels that were below the proposed dam and immediately contiguous to other lands owned as being a proper part of the whole tract even though not above the dam.

8400 Now, in regard to those lands it seems to me that the control of those lands is necessary to permit the full development of this Alameda system, and that the company or the city if it were going ahead with this development as a matter of prudence would want to own those lands before starting the development. What I said in regard to the upper Alameda lands applies to them. It does not apply quite as directly because these are a little further in the future. They are separated from the Calaveras Reservoir, and the Calaveras property would be a good property without these, but still these will be needed for the full development of the Alameda system. They are not very

expensive lands. The company has prudently bought them and they are wisely carried. It seems to me that carrying them is a part of the business of supplying San Francisco with water, looking at it broadly, and that the worth of the property used in doing that has got to be recognized in some way.

It may be said that there are two ways of doing that: one way is to carry them in the rating base as we go along; that takes care of them automatically as we go along; the other way would be to put them in a separate account and charge up the taxes and interest through a long series of years until they are wanted. I don't know but what that method is as proper as the other, but the other seems to me the ordinary and the natural way and it is the one that I have assumed would be followed. The taxes and interest go into the operating cost each year.

The Pleasanton Wells lands, or the lands on which the Pleasanton Wells are located, and which are immediately necessary for the operation of that property, the Pleasanton Tract comprises 4658 acres above the Pleasanton lands. That land I understand was bought to prevent the litigation or injunction from the owners of that land, who would be damaged by having the water table lowered under their property; it has been commonly found in supplies of this kind that property on underground reservoir like this is affected for a considerable distance and the people who carry on a supply of that kind either have to buy the land or pay the damages they inflict on the property owners.

8401

In this case I take it that Spring Valley thought it was better to buy the land than to stand the litigation and pay the damages, and they bought it. They own it and it is used and it produces certain revenue. As long as it is held I think that revenue ought to be taken into account in making up the operating account of the company. The ownership of this land in a certain way is related to water rights but it is related to water rights in a different way from the lower land. As far as this land is concerned its ownership gives the water company the opportunity to lower the water-table and utilize the underground storage; in other words, it gives it what we may call a reservoir right back of the wells. It does not give it any right to divert water as against the lower owners and does not make any difference with respect to those.

So it is separated entirely from the right to divert which I think is more ordinarily considered as the water right; in other words, the company had to settle with all the people down stream just as if this Pleasanton affair did not exist, and in addition had to settle with the people who owned the land above their wells for lowering the water-table temporarily, and that without regard to the diversion of water lower down.

Questioned by Mr. Searls.

8402

As to whether the company should acquire the rest of the Livermore Valley, it is a question as to how far the damages extend, and what trouble adverse ownership of the land can make for the company. I take this as an expression of actual experience so far, but what the experience will be in the future, I will not undertake to predict. It did not give them control of the water so far as trouble with owners further up the valley is concerned, but the depression of the water table is much greater in the neighborhood of the wells, and immediately up the valley from the wells, and I think that this tract covers that part of the Livermore Valley where the claim for damages would be greatest, and could be best substantiated. I don't think I can tell whether the land is very much damaged by the company's pumping to date, from looking at it, but I know from experience in other cases that the land looks perfectly good, and people have recovered very large damages, or have obtained injunctions. The first time I saw that land it was covered with hops, and it was a beautiful sight. It seems to me the question is not how much the land is damaged, the question is how much the company was, or might have been damaged by the litigation.

8403

It has been pretty nearly my experience in those matters that the company would absolutely have to pay the value of the land in damages if it condemned merely the water rights. I don't think that I have had any experience that involves the acquisition of a single tract of this size under just these circumstances of pumping. I have had experience in other cases where the area involved was as great as this, but held by a good many different owners. These lands were held in diverse ownership when they were acquired.

8404

Every man who is in the area in which the ground water is lowered will bring his action; they will get together; they will be well represented, and they will get all the damages that are coming. The jury will take into account not only the damages which have existed up to the time, but the future damages. The company does not want to pay for the damages for the past 6 years, within the statute of limitations, and be subject to further suits from time to time. They will take the water, and that gives them a right to it in the future; the jury has to deal, not only with damages that have actually accrued, but with all those that may accrue. My experience is that the damages run pretty high in those cases.

Mr. Searls: We will certainly contend that the Pleasanton lands are not, and have not been either used or useful in supplying water to San Francisco. I am not passing on the company's policy of buying real estate; I think it is immaterial; if they want to make a real estate investment, it is up to them.

Mr. Hazen: I took the Pleasanton tract at cost, because it was bought in 1911 largely. The next item refers to these two separate

parcels up the Arroyo Valle stream; one is a large field, and the other is an original dam-site, the so-called Cresta Blanca lands. My understanding is that the gravel pit was bought to do some work in diverting the flood flows on to the gravel, and getting them absorbed, and it was with reference to keeping the ground level of the water up. I will admit that I am not very well posted on that, and as far as that is concerned, it is all hearsay testimony anyway. As to that gravel tract, I think it was quite a proper use to buy the land to try and improve the ground water conditions in that way; whether it has practically worked out, I cannot say. I cannot say as to whether it has ever been worked out in that way; I didn't go into that. It would require a very small dam, if any, to spread the water. Mr. Lippincott and Mr. Mulholland have been very much interested in that, and I have had some talks with them about it; they have done something of that kind in the San Fernando Valley. Perhaps the company has not followed it as much as it might have done in this case. With reference to another dam-site, it was a matter of policy, and to prevent unpleasantness, I think it is worth the company's while to own any other reasonably promising dam-site that it can get within a reasonable limit of cost.

8405

The Pleasanton riparian lands, as I class them, amount to 702 acres, and are lands between Sunol and Pleasanton, and bear the same relation to the Pleasanton supply that the Calaveras riparian lands bear to the Calaveras supply. I think the Stone and the Nusbaumer tracts are included in that category. The Stone tract is that field that goes up to the top of the ridge north of the Sunol Cottage, and that is not included in the Pleasanton riparian lands. I think the Nusbaumer tract is included.

8406

The Sunol Gallery lands, 5,573 acres, include the Sunol Valley and the lands around it, going to the parcel lines. Those are gravel lands from which the Sunol water is obtained.

The next item is Sunol other watershed lands, 3,000 acres. That includes all the land draining to Sunol that has not otherwise been classified. It includes this Stone tract, for instance, which is on this stream which comes down to Sunol. I think it comes down into that gravel bed, and into the Sunol Galleries. The Sunol Dam is down below. It is tributary to the lower part, not to the upper part.

8407

Questioned by Master.

8408

The chief value of the Stone Tract, Parcel H-239, is because it is part of the watershed of a small creek which flows around back of the town of Sunol, and down into Alameda Creek. That creek flows through what is called Sinbad Canyon. It became a very fashionable place for picnics, and the company had no control over the picnics. The water came right down to the Sunol supply. Buying the land gives the company authority to police it. I don't understand that they altogether stopped the picnicing, but it gives them power over

8409 It to prevent abuses on the land. It is obvious that the water would flow down whether they owned the Stone land or not, but I would say that it was a justification in just the way I have described; and the same thing applies to other watershed lands, including those which I made 3,000 acres in all, and which includes all the lands owned above Sunol on this watershed that are not otherwise classified, appraised at \$134,800. There is a considerable part of that canyon that is not owned by the company, and I have no doubt that there is a good deal of picnicing there.

DIRECT EXAMINATION BY MR. GREENE.

The next are the Niles Canyon lands, and that excludes, as I understand it, the bed of the stream, which was assumed, I understand, to be a part of the water rights. This includes some other land. That is valuable as right of way particularly. It may have some other uses, but the principal use for the 630 acres is the right of way.

Questioned by Mr. Searls.

8410 The Sunol Filter Bed is really a ground water supply. I think, perhaps, the name "filter beds" is unfortunate as applying to it. It yields water of excellent quality, and in very abundant quantities in the early part of the year. It serves as drainage for these beds of gravel which are natural reservoirs; they are replenished with water by the rains in the rainy season, and these galleries gradually drain the water out, and make it available for use in the city. Toward the end of the season the water is drained down in these gravels, and the supply is reduced, and falls off to quite a small amount toward the end of a long, dry season. At those times the Pleasanton works come into play with their greater reserve storage in the deeper gravels, and maintain the supply at those times. The gravels act as filters for any impurities that may be in the stream, but I don't regard the Livermore Gravels and the Sunol Gravels as filter plants primarily, it is a ground water supply. The Livermore Valley is very much deeper than the Sunol; it is covered with a rather thick layer of impervious material, at many places at least, I think the gravel comes to the top at some places.

Questioned by Master.

By the Livermore gravels, I mean the gravel from which the Pleasanton supply is brought. The fact is that those filtering galleries at Sunol that are imbedded in the gravel, divert water that otherwise would not be diverted. The Sunol Dam diverts no water; it is simply to help these galleries get it. If the whole system was not there all of that water would ultimately go to Alameda Creek, and flow down by Niles. So it is an underground diversion in the gravel instead of a superficial diversion like the Peninsular sources.

Questioned by Mr. Greene.

The advantage of taking the diversion in that way is that purer water is obtained; also the storage capacity of the gravels is availed of. The two supplies taken together and supplementing each other are capable of maintaining an output of 20,000,000 gallons per day during the last year, for instance, and ordinarily of maintaining that average output throughout the year and more if there was more pipe capacity. It may be that in dry years they would not be able to maintain quite that amount but the falling off if any would not be very great.

8411

Obviously no such quantity of water could be obtained from the Alameda Creek at Sunol without storage. The gravels give the storage and take the place for instance of a service reservoir which otherwise might have been built there. If the country was as nature made it, if the railroads had not gone through and villages built, a large dam might have been built at Sunol and the Sunol Valley itself might have been a reservoir; it would have been much larger than Calaveras and San Antonio and Arroyo Valle and would have developed the whole supply at one point; it would have been a very advantageous development. Apparently the time when that could have been done has gone.

That covers the lands that I have included in this list—the lands I have considered. The company owns other lands that were bought for water purposes and might have been used or might be used or may be used; but they have not been used during this period and they do not bear a direct relation to those supplies we are considering and so I have not brought them into this calculation.

The right of way I brought into this column in the sum of \$500,000. That I think you understand as I stated yesterday does not represent any real valuation; it is simply that I did not have the information, and I believed from experience that a substantial item must go in and I put something in. It is all the rights of way for all the pipe lines of the company that are not owned in fee.

Questioned by Mr. Searls.

8412

I have not information enough about what rights of way would be excluded from that figure as in use or useful to give you any intelligent answer. I should think that the old Pilarcitos right of way might be excluded.

Mr. Olney: I think the only portion of Pilarcitos land we value is the portion that is in use. It is not the intention to value any of the old Pilarcitos land that is not in use.

Mr. Hazen: The water rights for the Crystal Springs system I have taken at \$100,000 per million gallons of capacity, that being taken from those who are working on water rights. That gives \$2,000,000. I use the same figure for the Alameda system, except that I deduct \$150,000 for the Niles Aqueduct structures which I have

8413 already mentioned. That makes \$20,078,000. I take the round figure of \$20,000,000 for the purpose of further discussion. That does not include the Calaveras water rights owned by the company and to be used but not yet in use.

On page 30 I have a schedule showing what I have done with this \$20,000,000. This treatment may not be entirely inconsistent with some of the agreements as to relative values of land as of different dates. Perhaps a more detailed schedule can be made up from data which was not available to me to replace this.

What I did was to start with the \$20,000,000 for land and rights as of January 1st, 1914, and to assume that from the beginning of this period, that is, directly after the fire until that time the average increase in land and rights had been 3% per annum, and that the amount was further increased each year by whatever amount was paid for land by the company. This calculation was made backward, necessarily starting with the \$20,000,000. For instance, in 1913, the 3% on the value as of January 1st, 1913, was \$580,000. The purchases were \$26,000. Those two items deducted from \$20,000,000 gives \$19,394,000 as the amount to be used for a year earlier. It is carried back in that same way year by year until the amount found for the 1st of January 1907 is \$13,902,000.

Mr. Searls: How is this going to check with our agreed values of lands for different years.

Mr. Greene: That is what Mr. Hazen just said, that it was not his purpose to make the two check up together and as far as there was any inconsistency our agreements would govern.

8414 Mr. Hazen (continuing): I don't wish to controvert the agreement at all. I made this up independently. My impression is it is not very wide of that; if it turns out to be though, that will govern. In projecting the calculation forward I have assumed that \$100,000 would be invested in additional land each year and that one per cent increases in value of the land and rights would take place. Ordinarily I should be disposed to make this calculation without estimating any increase, but in view of all the conditions here I have assumed a one percent increase in the value and the calculation is based upon that.

Questioned by Master.

The reason of no increase is because I thought that the increase is somewhat speculative and uncertain; that is, I would not want to invest money in this plant on the idea that the recovery and return upon that money was dependent upon the increase in value of the property; I would want to have the calculation made in a way so that the return of the capital and the return on the investment would be reasonably secure without taking that into account. If it increased in value from this period to another period I would say that that is something to be taken up for consideration at that time when it is taken up again.

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

I think perhaps I have given a very good reason for not increasing it one percent; perhaps it would have been better if I had not brought the one percent in here. I certainly have no objection to making the calculation without it. It is not a very large element in the whole situation.

On page 31 I have brought together the two main points of my rating base, the structures from page 5 and the land and rights from page 30, and added them up in the next column, making the total rating base. That represents my idea of an amount on which it is fair to reckon rates for the different times. That does not include the whole value of the property. I won't speak particularly of the land and rights because I have not had so much to do with those but from the standpoint of the structures and the general business it does not include the paving over that part of the pipes and mains, where the paving was laid after the pipes were laid; it does not include any allowance for going value, which certainly is part of the cost of building and developing the system, and it is part of the value of the property when its business is developed.

8415

Questioned by Mr. Greene.

It does not include properties out of use which have been bought for waterworks purposes and are still owned and carried for waterworks purposes, but which are not included in the list which we have just been through. It does not include working capital; the working capital is not a very large matter, but it is something, and it properly ought to be taken into account. I did not give an estimate on working capital, Mr. Metcalf will do that.

I have brought forward the net income from page 3 actually for the past, and projected for 12 years to come, and have found in the last column the percentages which this is of the rating base. It runs from 2.43% for the first year, 1907—and this is the calendar year, by the way—increasing as the population came back, and the revenue increase after the fire, up to 4.67% in 1911, and then running on without very wide change through the whole list, never getting to 5%. That computation includes the impounded money as a portion of the revenue; all my tabulations include that.

8416

On page 32 there is another table showing the increase of the rates required to give 6% on the rating base. I have entered here for the years of the past 6% on the rating base as I have made it up, and for the future I have entered only two years, to shorten the table. I think it would make little difference if all the years were included.

And then the operating expenses and the depreciation, and the sum of these makes the next column, the total required income, the income that would pay 6% on the rating base.

Then I have entered the actual gross revenue as it was in the past and as projected for the future two years, and then the per-

centage increase in rates required, that is, the amount which would have been added to the rates collected, including the 15% to produce a revenue that would pay the operating expenses and the depreciation and 6% on the rating base.

For the nine years, 1907 to 1915, the deficiency in revenue averages \$693,000 per annum, which is 6% on \$11,500,000. For 1921 and 1927, the deficiency revenue averages \$672,000 per annum, which is 6% on \$11,200,000. It would be necessary to mark off \$11,000,000 from the rating base, reducing it to \$29,000,000 to make it possible to build the additions that will be required and pay 6% on the investment.

8417 This calculation is made upon a rating base which is less than the full value of the property. In doing that the rate of return must be tied up with the amount by which the rating base is less than the full value of the property; in other words, if the paving and going value and other elements of value are excluded, then to make the investment an attractive one to an investor so that capital may be assured the rate of return must be increased, and must be increased in the same ratio as items are excluded. For instance, if the going value is taken as one year's gross income it amounts to about 8% of the rating base, \$40,000,000. If 6% were a fair return on the whole property then 8% or 6% or .48 of one percent, would be added to give an equivalent return with the going value excluded; and 6½% on a base, excluding the going value, would be needed to put the property in as attractive a position as 6% on the whole value including the going value.

The computation at 7% would be the same, 8% of 7% would be .56 of one percent. If 7% were fair on the whole value of the property, including the going concern value, then 7.56 would give an equivalent return on a rating base which excluded it. The same method would apply to the other items. I did not try to make too fine a division in making these calculations; I simply represent on page 33 the calculation using 7% on the rating base instead of 6%. The calculation is otherwise made in exactly the same way. For the nine years, from 1907 to 1915, the deficiency in revenue averages \$1,067,000 which is 7% on \$15,200,000. For 1921 and 1927 the deficiency revenue averages \$1,193,000, which is 7% on \$17,100,000. It would be necessary to mark off \$17,000,000 from the rating base, reducing it to \$23,000,000 to make it possible to build the additions that would be required to pay 7% on the investment.

Questioned by Mr. Searls.

The \$17,000,000 should not be marked off. My conclusion is as a result of this whole study that the conditions of the water service in San Francisco are very difficult. I think probably with respect to the physical conditions San Francisco is the hardest city to supply with water in the United States. The service is necessarily more

expensive than it is in other cities. When the service is supplied it is worth more. The rates in the long run must be sufficient to support the service. In my judgment the rates in the past, even including the 15% additions, have not been sufficient to support the service. 8418

From the consumer's standpoint the service is worth all that it costs; it is worth a great deal more than it costs because a good water supply contributes as much to the prosperity of a community as anything that can be mentioned; the cost of the water service even under very difficult conditions in San Francisco is very moderate indeed as compared with the cost of other public utilities, as compared with the cost of the telephone, for instance, or with lighting. The business will pay whatever is necessary to support it.

I think the best way of discussing how the cost of the water service here compares with the cost of service in other cities is from the standpoint of amount of collections per capita, or from the amount of collections per million gallons. Taking it up in that way, the cost of the water service in San Francisco, without attempting to give you a precise figure, is something like double what it is in the Mississippi Valley and east thereof in this country. I have not the Los Angeles figures in mind just now, but if the Los Angeles Water Department collected rates to make the service self-supporting, they would substantially double their rates; in other words, about half the cost of the service is raised from selling water, and the other half is raised from taxation and assessments. In Los Angeles there is also this condition which has to be kept in mind; the property owners have in a great measure, paid for the pipe system that has been built, and it has not cost the city anything. 8419

By that I mean, when a pipe line was laid in a certain street, it has been the system there to assess the abutting property owner so much per running foot; that system does not, in the aggregate pay for laying the pipe in the system, but it pretty nearly does it. The abutters have paid for the pipe, the city has not done so. That is a very important element in fixing rates. There are four cities in the United States, so far as I know, where that system has been followed, namely, Los Angeles, Seattle, Milwaukee and St. Paul. In all other cities of the country, so far as I know, the water company or the city lays the pipe, and pays for it, and the rates normally have to carry the burden thereafter. 8420

The situation in Los Angeles is further not comparable with that in San Francisco because the city of Los Angeles was built on a water supply. The fact that the water of Los Angeles River resulting from the drainage of the mountain back of the city stored and equalized by the over-abundant gravel deposits in the San Fernando basin gave a large and a reliable water supply. That was the reason for the location of the city. The amount of water available

from that source has been sufficient to supply Los Angeles, and the neighboring communities, up to the present time, and I understand it is not completely developed yet. There is some more water to be had from it.

8421

When it came to getting more water for future growth, although Los Angeles had to go a long distance, they were fortunate in finding a route for an aqueduct bringing water from a very high source that followed a very direct route on a down hill grade all the way. Of course, there are some siphons. Generally speaking, though, it was a very easy route for an aqueduct. It went through a wild country where the ground cost them nothing, and the water rights cost them hardly anything.

In comparison with that, San Francisco was built on a harbor; the harbor was undoubtedly the dominating consideration in the location of the city. There was not any natural water supply for a large city on the Peninsula, or anywhere near it. When it comes to going outside and bringing water in from the Sierras, for instance, instead of having the country between at an elevation to permit of an economical aqueduct, there are a series of mountain ranges and valleys; the water has to go down to sea level and go across long flat bottoms, through pipes, under high pressure, and then has to go through the ranges and tunnels. That is true, in a measure, of the Calaveras. It is true in a greater measure of Hetch Hetchy water, or any other water that could be introduced. So that the distance is not any indication of cost. An aqueduct across the San Joaquin Valley and the Diablo Range, and the Santa Clara Valley, in coming into San Francisco, is going to cost enormously more in proportion than the Los Angeles Aqueduct, because of the physical difficulties en route.

8422

Mr. Ellis: The San Fernando Dam, the connection between there and Los Angeles was built by the City Water Department, and not out of aqueduct funds.

Mr. Hazen: I think that is correct; that is as I understand it.

Mr. Metcalf: Mr. Mulholland told me that too.

Mr. Hazen: The City does build it, but they don't reckon on it as part of the aqueduct cost. I don't know how they do classify it. The aqueduct costs have been used as we have used them in this case, and as they are shown in the aqueduct reports, they don't cover that.

Questioned by Mr. Greene.

The whole condition as between here and the Mississippi Valley, or east thereof, is different. I don't think the rates in the East have any bearing on the rates here. There is a whole series of conditions that tend to make the rates higher here. The materials cost more, and there is a differentiation on freight rates that perhaps averages \$10 per ton. That affects all the supplies that come from the East,

and that is a large part of the whole, although not all of it. The labor cost has been somewhat higher, and that adds to the cost of construction and to the cost of operation. The rainfall is less, and it is very much less regular. So that the amount of water that has to be stored to maintain the service supply through a term of years is very much greater, I suppose six times as great relatively as it is on the Atlantic Slope. That, of course, means more money. Then there are the peculiarities of topography, San Francisco being built on the end of a peninsula. That situation is perhaps unique. New York is at the end of a peninsula, but perhaps 40% of the New York supply comes in from the Long Island sources. It is as if the Golden Gate were shallow, and easily crossed, and as if Marin County contributed a large amount of cheap water.

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Then again San Francisco is a very hilly city; that means increased expense for high service systems, and for pumping and operation. The cost of the service is substantially greater in San Francisco than it would be if it were flatter, and not so high. The bulk of the water at San Francisco is distributed at the Honda level. Perhaps bulk is not a good word to use, but a good deal more is delivered at that level than at the lower levels, and that is some 370 feet above tide, whereas many of the Eastern cities are supplied with water at not more than 130 to 170 feet above tide, or above the river levels opposite.

Questioned by Mr. Searls.

Of course a fair price for service is fixed by two limits; it won't normally be less than the cost of the service to the party that supplies it; on the other hand, it will not be more than the value of the service to the one who takes it. When I talk of value to the consumer, it is not infinity, but it is pretty large. In a free commercial enterprise, the rate that would be fixed would lie somewhere between those limits; but as a practical matter in the United States the upper limit was marked off a long time ago, and by public regulation, or by public ownership, the rates have been placed down to actual cost, practically, throughout the country, and in many cases to less than cost, so that so far as any consideration of the upper limit is concerned, it has practically gone by the board, rightly or wrongly.

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I don't see how, in a locality of this kind, a utility furnishing one of the absolute necessities of life can figure a closer margin than in a locality where the natural conditions permit of a wider range of prices for their service, unless you expect the company to do business at a loss. I don't think there is anything in the contention that the company in a locality of this kind should be expected to do business at a less return on the value.

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Questioned by Mr. Greene.

In making up the rating base for land, on page 30, I carried the temporary value of the Merced land only to the point where Cala-

veras water was assumed to be available, and then deducted the difference between that temporary sum and the smaller sum which I assigned to it on account of its emergency earthquake worth. That was carried forward to the end of the conclusion. On the structures—this is suggested by Mr. Searls' list of structures which he thinks are out of use, some of the structures were built during the period under consideration, and near the end of it, and as far as that is the case, they only come into my rating base from the first of January after the time when they were completed, or at least after the money was spent.

Questioned by Mr. Searls.

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The date that I used in taking those into account is shown on page 5; on the first of January, 1914, to take a specific case, I have the \$20,000,000 in my account, that being my starting point. In 1913 the construction account was \$151,000. That \$151,000, I think, covers most of the structures that Mr. Searls had on his list as not being in use in this period. That \$151,000 is deducted from \$20,000,000 to get the amount going into the account for 1913, so that \$151,000 of construction is only considered by me in the rating base for the calendar year 1914, and thereafter. It did not come into the 1913 account at all. The same would apply to the structures of other dates, so that in carrying it back in that way I think I have made the deduction that Mr. Searls asked for with respect to those items.

CROSS EXAMINATION BY MR. SEARLS.

8427-8428

I don't think that the supply of water to the city during practically all the years in litigation was very much less than the reasonable demand of the population required; I don't think that a very much larger amount of water could have been advantageously sold if it had been available. I think probably some more could have been sold, but I don't think a very large amount.

I think generally that the quantity of water in the outlying districts has been sufficient for ordinary needs; perhaps not in all cases. The pipes have been insufficient at times, and have reduced the pressure in parts of the system below the normal, and that has tended to curtail use. I have heard rumors to the effect that for the last six or eight years there has been complaints about the quantity of water that was delivered by the company, the pressure under which it was delivered and the lack of extensions and the inability of residents to get water for ordinary domestic uses.

As to the map shown on page 212 of the Freeman report, an appendix to the report, giving the complaints of the inadequacy of the supply in districts as far down town as Buena Vista Park, stretching out through the Mission and the Bernal Heights district, out near the College Hill Reservoir, extending out into the Sunset district, practically the whole of the upper part of the Sunset, and

the Richmond district adjoining Golden Gate Park, also to the foot of Van Ness Ave. and the Ocean View district, I would not say that the supply was wholly insufficient. I don't think you have shown me anything to indicate that it is wholly insufficient. You have shown me something to indicate that there have been some complaints here and there, and no doubt the complaints were well founded.

Looking at the map I would not say that the complaints extend through practically all the sections of the city except the low level downtown sections and the Western Addition; they show, apparently, 24 complaints. Referring to a big city, in a period of years, that is not a great many.

As to the reports made by the chief engineer of the fire department as to the inadequate pressure in the hydrants in different parts of the city, I have no doubt that the pressure has been inadequate in parts of the city and that more pressure would be desirable.

I am somewhat familiar with the extent of the distributing system in the outlying districts of the city. There are places where there has been no water and no service. I am not familiar with the exact localities, but I know that the distribution system during this interval has not been extended, and that there were places where real estate operators and others would like to have had water, and it was not available. I don't know how far it may have happened that people who have built their homes out in this section of the city were actually suffering from inability to get water for domestic uses, that is in the portion of the Richmond District which adjoins the Park, and extends from the ocean to the crest of the hills near about Twentieth Avenue. My impression is it happened in rather restricted areas, if it happened at all.

I am familiar with the higher districts in the Potrero, such as the Bay View District, and the University Mound District, only as I have been through the city quite a good deal since I have been here. Those are fairly thickly populated sections. I should doubt if there had been well justified complaints over considerable area over there as to the insufficiency of the water pressure to give them water during the day time. If they were not able to get water at all between certain hours in the morning and the evening, I should consider it an indication of insufficient service.

The company has not kept up the system, there is no question about that. The system has fallen behind. I think the question is a legal or ethical one as to the duty of the company to extend the system, when it was compensated by rates which were not paying expenses. It would have been entirely possible from an engineering standpoint for the company to have adequately have supplied the city with water during this period if there had been no limit of money. By "no limit of money" I had no reference to rate-payers advancing money for construction, but I don't know of any way

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that a company can raise money to build new works when it cannot show a profit on its operations.

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I do not accept Mr. Freeman's statement on page 391 of his report; "If the three proposed storage reservoirs contemplated by "the Spring Valley Water Co. had been built, the total supply of the "whole Alameda Creek watershed would be 65.8 millions gallons "daily." There are two fundamental differences between Freeman's estimate and mine. The gagings of Alameda Creek were made at the Niles Dam for a great many years, and afterwards at the Sunol Dam. The dams are not standard weirs. If a weir is a standard weir, and by that I mean sharp crested and true to a particular form, the amount can be estimated by the weir formula, with a very fair degree of precision. At the Niles dam, Mr. Schussler made some estimates and assumptions in regard to that; and the earlier figures as kept by the company were made up in that way. When Sunol was substituted for Niles, the same methods were followed. It was not a standard weir. Mr. Freeman thought that the discharge was a great deal less than the discharge over a standard weir. There was not any real basis for getting at it. He thought it out and he thought the discharge was less, and so he deducted a very large amount, because he thought it was less than over a standard weir.

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Now, since that has happened, the matter has been tested out, and it is not a matter of speculation any more, there is a great deal of information now available that Mr. Freeman did not have. In the first place, it was tested out by Professor Le Conte at the University with a model dam, and by some experiments that were made up at the Clay dam. And then it was also tested out by making current meter gagings of the flow during the flood at Sunol. Those were taken in co-operation with Mr. O'Shaughnessy and the engineers of the Spring Valley Water Company. The rating curves for those dams is now known certainly, and it is now known that the actual quantities that were discharged over those dams were pretty close to the allowances that Mr. Schussler made, and that Mr. Freeman's deductions were not justified. That is the first point of difference.

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Now, the second point of difference is that before estimating the amount of water that was available from these sources Mr. Freeman estimated that the whole Niles Cone was going to be irrigated and he allowed an amount of water for irrigating it sufficient to irrigate that amount of desert, that is, deducted from what is available, before giving the amount available for San Francisco. Of course, this is hearsay on my part, but I do not understand that the Niles Cone is irrigated to that extent, or that anyone has the right to use the water if it could be, and that deduction certainly ought not be made. There are some rights on the Niles Cone, and they must be recognized, and I have intended to fully recognize them in my esti-

mate; but they are nothing like as great as the allowances that were made in the calculations which you cited.

I have heard rumors to the effect that there is a lawsuit pending in Alameda to enjoin the company from taking any more water from the Alameda Creek.

I had not been advised that the temporary injunction was averted by the company promising that it was not going to take any more water for the matter of a year or so, at least.

Mr. Searls: Correct me if I misstate the effect of Mr. Behan's affidavit.

Mr. Olney: You are mistaken as to that, Mr. Searls.

Mr. Searls: Well, I would like to have your statement as to that, Mr. Olney.

Mr. Olney: They sought a temporary injunction, and we said we are diverting to the full extent of the capacity of the pipe-line at the present time, and that it could not be increased without building another pipe line, and that could not be done until there was a reasonable chance to try the case. There were other grounds on which the temporary injunction was opposed. What ground the judge finally put it on, I don't know, and I don't think anybody else does. He simply denied the temporary injunction. I will say in that connection that there was quite a showing as to the amount of surplus waters coming down that stream which could be taken without affecting the rights of the people below.

Mr. Searls: I was referring to the statement in Mr. Behan's affidavit, "that the construction and use of said reservoir will not, of itself alone, have the effect of diverting or making possible the diversion of more water than at present diverted. That the limit of diversion from said Alameda Creek is the capacity of said pipe line hereinbefore mentioned. That said pipe line is now being used to its full capacity."

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Mr. Olney: That is coupled up with the statement that the reason for it is that the present pipe line is being used to its full capacity, and your statement to the witness was that a temporary injunction had been averted by a promise on the part of the company that it would not divert any more water. That statement is essentially incorrect. One of the grounds on which the temporary injunction was opposed was that it was not needed.

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In the matter of the Livermore Valley litigation, suit was never filed there. They formed what they called a County Water District, and then came to us to know if we would talk settlement, and we have been talking settlement. The people that are involved in the settlement are people that are immediately to the east of the Spring Valley land, and these people who are surrounded by Spring Valley land; there is also included in the settlement an arrangement with

the town of Pleasanton. That settlement has not yet been made. I should say that the trouble did not go over a mile at the outside east of the company's lands.

CROSS EXAMINATION BY MR. SEARLS.

8438 Mr. Hazen: Assuming that the total available sources which the company had did not exceed the estimate made by Mr. Freeman, it would still, in my opinion, be worth while to build the San Antonio and Arroyo Valle Reservoirs, even if you could not get but 50,000,-000 a day for the Alameda system. I think you just quoted me, however, 65,000,000 for that system, and 20,000,000 for the Peninsula, making 85,000,000 altogether.

The construction of the Calaveras reservoir of itself, and without the proposed pipe line, would ordinarily not have the effect of making possible the diversion of more water from Alameda Creek than is at present diverted. It would simply mean that the full capacity of the pipe line could be diverted at all times. The present sources will very nearly accomplish that. It may be a question that a year will not happen sometimes so dry that the full delivery capacity of the Alameda pipe line could not be maintained. If that should happen, the Calaveras Reservoir would permit that capacity to be maintained. The capacity of the Alameda line, with respect to the history of the deliveries, averages something over 15,000,000 gallons per day during the period which these rate suits cover, out of a possible 16,000,000 for most of that time. It has been increased as the result of what I should call an emergency treatment by the Ravenswood Booster to 21,000,000 gallons per day, and it has been running pretty nearly at that capacity since the Ravenswood Station has been in service; so that the variations in capacity throughout the year are very small.

Questioned by Mr. Greene.

8439 It has only been since the Ravenswood Booster was installed that they have been drawing 21,000,000 gallons each day in the year; they could not have drawn it before that, but since the plant has been installed, I think they have averaged 20,000,000 out of a possible 21,000,000. It has been going pretty nearly all of the time, and it is pretty nearly 100% load factor. I may be wrong as to its running all the time, but when it is running, the water will come to a twenty-one million rate, and when it is not running it will come to a sixteen million rate. It would not have to run 12 months in the year, obviously, to average 20,000,000.

Questioned by Master.

At times certain telephone calls were received at the Sunol Cottage from the Ravenswood Pump to change the rate of draft; there is often a surplus of water at Sunol, and somewhat more is drawn than comes into the city, and the surplus spills at one of the

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waste wiers along the line; it can be regulated so that that waste won't be very much. This Ravenswood Booster Station was put in, I think, in 1913.

Questioned by Mr. Searls.

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The construction of the Calaveras Reservoir in itself will practically have no effect on the amount of water that is transmitted through the present Alameda pipe line.

My estimate as to the increase in population in San Francisco represented my judgment of the amount that one would be warranted in counting on in investing money in works of this kind. If one figures on too great a growth, and builds the works to provide for it, and the growth does not materialize, and the revenue does not come with it, it is apt to be embarrassing, so I don't like to assume too large a rate. On the other hand, I wanted to get a rate that was a reasonable approximation. This rate is just under 3% per annum, which is about an ordinary rate for prosperous American cities to grow. Some cities, when they boom, grow a good deal faster than that; a great many cities grow slower than that. In this case the situation is somewhat altered by the fact that there is a strong growth across the bay, and the growth there has been more rapid than in San Francisco. As far as the conditions that have brought that about continue in operation, it tends to a slower rate of growth in San Francisco than would be the case if the whole urban center was included. The disaster of 1906 undoubtedly had a very material effect on the growth of San Francisco for a few years, and I think it would be hazardous to base one's estimates entirely on the history of the past ten years; on the other hand, perhaps it would be hazardous to neglect what that teaches. I think there is not a single year in the past ten years where the rate of increase has been as low as 10,000 a year.

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Taking Mr. Freeman's estimate, which gives an estimated population of 700,000 by 1930, my corresponding figure, projecting it from 1927, would be 640,000. Mr. Schussler's estimate of 800,000 was made before the fire. I should think there was no reason for counting on so large a growth at the present time. These figures simply represent my judgment of what can reasonably be counted on for the purpose of this kind of a calculation. If I had assumed that we were going up to 700,000, instead of 610,000, it would have meant that the whole construction account would have been boosted in that proportion, because the works required to supply 700,000 would be proportionately greater than those required to supply 600,000, and it would not have changed the conclusion very greatly; it would in some measure, but not very greatly.

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It is true as to parts of the works that the construction goes by steps, and that within quite a large range of consumers the same works would be sufficient to supply them. On the other hand, there

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are large parts of the works that go on increasing with the population, and further, if we assume 600,000 instead of 700,000, it would mean that the next step in quite a number of cases would have to come into the calculation. I should say that the gross income would come pretty closely in proportion to the population, other things being equal. It is not a fact that the consumption is very much lower than the consumption in any other city in the United States; Providence, Fall River, Lawrence, Lowell, and Hartford, are cities which have a lower per capita consumption. Where meters are used, and the restriction of waste is accomplished, the ordinary rate of consumption in Eastern American cities runs from 50 or 60 up to 80 or 100 gallons per capita, depending largely upon the manufacturing uses. Cleveland has a metered service, but I don't remember just what the current consumption is. The amount of 104 gallons in the Freeman report is for some years ago; I have some more recent statistics on that. Cleveland has a great deal of manufacture, and it has a very low water rate. It is on the lake, and the water service is a very cheap one. Also a great many of the cities have hot summers, and a good deal of water is used out of doors in a way that it is not used, and as far as I can see, never will be used in San Francisco, the climate does not call for it here. A few years ago the per capita consumption in New York was over 100 gallons; I think it is under 100 now. New York is not all metered by any means, and it is going to be lower than it is now. Boston has been reduced very greatly by the meter system, and is using less water now in the aggregate amount, with a great increase in population, than it did 16 years ago. The waste in Boston was unrestricted for awhile, and it went up to a pretty high figure.

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Philadelphia went up to over 200 gallons per capita without any restriction of waste for years. They have been reducing waste there also. I don't remember just what it is, but it is a great deal less than what it used to be; that applies to Pittsburg, and to Buffalo. Pittsburg, Buffalo and Philadelphia were the three high cities in the United States. Pittsburg and Philadelphia are reducing waste; Buffalo is still following the old way. I don't know what their consumption is. They are building tremendous pumping stations. I don't remember the consumption for Los Angeles. Los Angeles is metered.

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The Denver consumption is very high. There are several reasons for that; one is that the City has never permitted a company to use meters, and everybody wastes as much water as he likes; then they have hot, dry summers in Denver, and they use water very freely for irrigating the lawns, and that takes a great deal of water. I went through that calculation once, and all the water that is used on lawns accounts for only a small part of the excess output in Denver; most of it is simply waste.

In a city like San Francisco, where you have a number of flats in each building, it tends to decrease the per capita consumption within a given area; that sort of population uses very much less water per capita than scattered houses with separate grounds. I don't want to discourage gardening. The water has to be sold. It is the same old story, people want more water, and they want more waterworks built, but when the water is available, they don't want to buy it at rates that will pay interest on the investment. I am looking at it from a standpoint of what I think can be sold at remunerative rates. I know of the City of Ithaca where people pay rates that pay the charges on two systems of waterworks.

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I have not tried to carry my computations forward to 1950, showing the total amount that will be required by that time; I should think that would be rather speculative. It is somewhat speculative to go ahead 12 years, but to go ahead 23 years more increases the speculative element tremendously. I realized that for all these years I have only increased the total consumption by 10,000,000 gallons over what is actually being taken now. On the basis of this population I think I make adequate allowance for the growth of the city, and the extension of water mains to the outlying districts. If the population increases very much faster, then the capital expenditure would have to be increased in proportion. The records show that the consumption jumped from 39.4 to 42.6 million in one year, between 1914 and 1915, and my first thought would be that it was primarily due to the Exposition, and the added business that came with that. I think the consumption might well be less than 42,000,000 during the present year. I see that I have estimated 43½ million for 1916, which is a little more than the record of last year. I leave it at 43½ for about five years, because of metering; that would not otherwise be possible.

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Questioned by Master.

As a result of metering in Oakland, the company there is putting out no more water today than it did in 1905, I think, and it increased in population, increased its services, and increased its revenue on the same quantity of water.

Questioned by Olney.

The City of Buffalo gets its water from Lake Erie.

CROSS EXAMINATION BY MR. SEARLS.

My basis for estimating annual increase in gross revenue is a consideration of the last two columns, the per capita, and the per million gallons. I considered that the revenue per million gallons would come up somewhat with the metering, and that also the per capita would increase slightly. I let the per capita come up slightly, because it is my experience that with the rates that are not changed, the per capita income tends to increase slowly. One would perhaps think it increases

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exactly per capita, but experience shows that it does increase a little faster.

The figures in the fifth column I just studied out, assuming a very slow increase per capita, and then checking it with the per million gallons, I adjusted the figures until they looked reasonable to me. They are not supposed to bear any particular percentage to the increase in the preceding year. They naturally would progress in a somewhat regular series. The income of \$3,730,000 in 1917 is \$7.31 per capita, or \$235 per million gallons; during 1915 the actual receipts were \$7.41 per capita, and \$233 per million gallons. It just represented my judgment; there is not any fixed rule.

Questioned by Master.

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That would be the 43½ million gallons per day, multiplied by 365 days in a year, multiplied by 235 per million gallons; it would also be \$7.31 per capita for a population of 510,000. I must have estimated per capita first; then I adjusted the figures. I usually figure it both ways, both per million gallons and per capita, and then the figure I selected was an adjustment of the two products. I don't remember just now what process I went through in reaching it. They are the parallel methods of estimates which would give more or less consistent results, and I would consider them both in making this.

CROSS EXAMINATION BY MR. SEARLS.

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I remember the original project for bringing water to San Francisco, as laid out by the city authorities, very definitely, because it was given to me to work on. All the projects were to be made for a capacity of 60 million gallons per day, and all the estimates were to be compared uniformly on that basis. Those were my instructions which I followed in that part of the work which was assigned to me, and which, of course did not relate to Hetch-Hetchy. I had no part in expanding those estimates to the basis of the needs a century hence, and I have no recollection of it. I don't know anything about it. I don't believe that the Hetch-Hetchy works will ever be built to bring in more water than there is a reasonable prospect of a market for within a reasonable length of time. My judgment of it with respect to the time when those estimates were made is that the 60 million gallons per day was a very reasonable starting point; it was fairly in excess of the rate of consumption at that time, and not too far in excess.

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If 100 million gallons of water were sold in 1927, instead of 51 millions per day, the revenue would increase.

I have mentioned the structures built in 1913, which I understand Mr. Searls thinks ought not to come into the account because they were completed at so late a period. The only point that may remain on that is that some of the wells, and some of the pumping equipment at Pleasanton were put into use at the end of a dry season, and

it would be necessary to maintain the full discharging capacity of the Alameda pipe line at such time; the seasons since 1913 have not happened to be very dry, and some of the structures have not happened to come into use; they represent a small amount in the aggregate, and in my opinion, a reasonable reserve there is a necessary part of the development, and I should consider it in use, even though they had not physically been used because we have not happened to have a very dry season. They are all connected up.

There was one item of pipe at Millbrae which I valued which is not in use. I valued that simply at its salvage value. In other words, I depreciated it so as to leave only its salvage value. It is only a matter of a few thousand dollars. It is perfectly good pipe, and perfectly good to be laid over again. I should be disposed to consider that as stock on hand to that extent.

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The clay dam at San Mateo Creek I took out. The item for pile bulk head on a 7-acre tract at Baden, it is my impression, was necessary for something, but I cannot tell now just what it was. As I remember it, it was built as a protection to the pipe line.

If the sewer line from the San Andres Screen Tank to the bay, extending through the Aqua Pump Tract, is not in use, you can mark it off. The paving over mains in San Mateo Park, and those subdivisions that have been built up since the Crystal Springs pipe line was laid, I marked off. I made a separate item for those supply mains, and it amounted to \$36,500, if I remember correctly.

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The engine and boiler room in the old Crystal Springs Pump House, I estimated at \$2,410 after depreciation. It is used as a storehouse. I thought it probably had that much residual value for another use. That is marked 7% depreciation.

The drainage ditches I did not exclude. The ditches on the Pleasanton lands were excluded, but those ditches are some ditches about the Pleasanton wells; as I understand it that ground was a marsh before the company commenced operations, and this draining had to be done before the well-driving could be prosecuted. Those represent a necessary part of the construction, and so I keep those in my estimate, but all the drainage of the Pleasanton lands, relating to the tract, I excluded, the wells that drain the water level down, and drained the ground; I looked at those ditches as a necessary part of the construction. The marsh which was there in the first place had to be contended with, and this was the way of doing it. It is really cost of construction, as I look at it. I excluded the drainage canals of the Pleasanton Ranch lands.

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Mr. Metcalf: The next item, the Pleasanton operative wells—marked “G” on the list, you do not contend that after 1913 it should be classed as out of use, but merely prior to that date?

Mr. Searls: Prior to that date, yes.

8456 Mr. Hazen: The Laguna Creek Dam goes with the Hadsell Ditch, and some other things, and is part of the old way of handling the water on to the Sunol Tract; that has not been used for a few years, but I think has been used at no very distant date, and could be used, and I am inclined to think that ought to be retained as a structure. It does not represent very much money. The Hadsell Ditch for a section has a pipe buried in it now. It is not a very large item, and I will admit that there may be a little doubt about it.

Mr. Greene: Well, if we cannot find out how that can be used, we will cross that off.

Mr. Hazen: On the Honda, Mr. Searls, you have some items marked there, and it is my thought that my allowance for depreciation on Honda, which was quite substantial, would cover those things. It was because the Honda Reservoir is not a modern design, and is not in all respects in the best order, that I depreciated it as I did, and having depreciated it, I don't want to mark off the items that are defective.

8457 The Pleasanton Pumping Station No. 2, page 3, is also some of the 1913 construction.

I cannot say whether it has been the practice of the company to bring their capital expenditures into the construction account as fast as they accrue. I don't think I am qualified to say what the practice of the company has been in keeping its books.

8458 If you make the assumption that the rates yield a proper return on the property which is already in use and service, the normal increase in the revenue, based on the value of that property which is in use, will tend to take care of the additional cost when the new works are put into use, assuming that you carry the whole structure in at once. So if you make that assumption, it is my impression that probably either system would work out equitably to the company. That is, if consistently carried through.

It may work out so that it does not require any increase in rates at all if the structures come in at the point at which the revenue under the old rates has increased to a sufficient point to carry them, or it might not; it would depend upon conditions, and following the system by which I projected this into the future, and charging up the capital as the money is expended, reduces the sharpness of the steps that I spoke about very much. Obviously the line would be a more jagged one if every structure was carried until it was completed, and then the whole cost with interest during construction was brought in as one unit.

I think if the rates that the company is collecting today were what I should consider normal, it would not be necessary to increase them; normal rates would take care of all the things that I am contemplating in this development. That is perhaps a matter of definition, because I should regard normal rates as rates that would do that. Any

rates that would not do it would be less than normal. I should hope it would not be necessary to increase the rates every year. That would be a pretty hard proposition to manage. It is hard enough to increase them once. I have in mind the gradual increase of the construction account each year, due to the additions of the amounts spent that year in new construction. If my rates are below normal, I would not increase them every year under my theory; I would try to find out a rate that would carry the business for a reasonable term of years, at least five years, and perhaps ten years; perhaps that would be as far as it would be wise to try to anticipate the business, and fix the rate for that interval. Fix it once and for all, and the sooner the better. I would fix a rate in 1916 to take care of the new construction that was to come in 1920. I don't mean by that that I would fix a rate that in 1916 would produce a revenue that would pay interest on the capital that had been spent in 1920, but I mean to fix a scale of rates that would permit the whole business to be carried forward, and pay a satisfactory average return during that interval. The increased gross revenue is an element in the system.

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The increase in gross revenue ought to be estimated conservatively in a calculation of that kind. The company has to take that chance. It has to provide for a growth which may not happen, to a certain extent; it has to finance itself so that it will not be embarrassed if the growth does not come. The safe way is to make a conservative estimate. If the growth in population between 1916 and 1920 should be 20,000 instead of 10,000, the condition would be somewhat more favorable by 1920, but the amount of new money that would have to go into the plant would be increased very greatly on that assumption, and that would eat up quite a part of the increased revenue that came from the extra population. It would amount to anticipating year 1923 or 1924, according to my schedule, and another way of putting it would be to say that I would be in the same position in 1920 that I would be in in 1924. It would work the other way, also, that if I had estimated too conservatively here for my gross revenue, that means that I have also estimated conservatively the amount of new construction; the two go together. I worked my average rate base for this period backwards and forwards from \$40,000,000. I should say that \$40,000,000 as of the first day of January, 1914, is not, in my opinion, the fair value of the property on that date for the purpose of rate fixing. I mean by that that I ignore to some extent the value of the property in reaching a basis for rate making. I used the \$40,000,000 as a rate base, which I thought would be fair to use in a certain way, but I don't think that represents the value of the property. The term rating base seems to me is a matter of definition, and I think that is about as far as I can go. I will have to have some one else struggle with the definitions. As far as the rating base is not the value of the property,

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the figure that I have given you is not the valuation. I don't know that I have used the term value for rate purposes, and I hardly know how to define it.

8463 I should say that a rating base was something taken as a base for calculating fair, or permitted rates; for instance, in the older corporation law, many Eastern corporations were chartered with permission to earn 10% on their capital; for such a corporation, the capital stock is the rating base. They have the permission to earn 10% if they can under rates that are otherwise fair, and the capital stock is the rating base; now, that is not the value of the property. The property may be worth a great deal more, or a great deal less than the investment. I would say that rating base represented that part of the value of the property in use which might be considered in fixing rates. It represents all the items that perhaps should be considered. There is a qualification on that, because the rate that is to be considered is tied up in a way with the rating base. A fair rate may represent either a lower rate, or a larger base, or a larger rate on a smaller base. I don't think it can be defined that one can say that one thing is the rating base, and that that is right, and that some other way of making it up on different considerations is wrong. I would say that that is shown by my treatment of going value. It seems to me that the rating base should be taken in connection with a rate that takes into account that some substantial elements of value of the whole property have been excluded from it.

ONE HUNDRED AND SIXTEENTH HEARING.
MARCH 15, 1916.

Witnesses: ALLEN HAZEN for Plaintiff.
F. A. RADLE for Plaintiff.

Witness: ALLEN HAZEN for Plaintiff.

8462 A (Certain corrections noted in the transcript).

CROSS EXAMINATION BY MR. SEARLS.

Hazen

8463 A

I have here some plottings of the consumption by years and months for a number of works, which represent a number of works I have had to do with and been interested in. Referring to it, I can state that the consumption in Boston in 1908, before they commenced general metering, was about 127 gallons per capita. It had fallen to about 94 gallons per capita in 1913, and was still falling, the metering not being completed. Denver, Colo., has used about 200 gallons per capita; no meters. Des Moines, Iowa, with complete metering used about 56 gallons per capita in 1911, that being the last year for which I have statistics. Fall River was using about 45 gallons per capita in 1913. That has been very constant for the last 10 years, and is

completely metered. Fall River is very low, it is a manufacturing town, and the mills have their own supplies. The city works do not supply the mills. The same is true in part as to Hartford, Conn., which used 76 gallons per capita daily in 1913, that being all metered. Lawrence, Mass., is a mill town, with conditions similar to those in Fall River, and it used 45 gallons per capita in 1912. Lowell, Mass., another mill town with similar conditions was using 50 gallons per capita in 1912. Milwaukee, on Lake Michigan, with very cheap water, and all metered, was using 110 gallons per capita in 1914. Minneapolis, practically all metered, was using 79 gallons per capita in 1913. Poughkeepsie, N. Y., all metered, was using about 100 gallons per capita in 1914. Providence, R. I., practically all metered, was using 67 gallons per capita in 1913; that has been very constant for a long time. Providence was metered a long time ago, and the consumption has increased steadily with the population. St. Paul, nearly all metered, was using about 58 gallons per capita in 1914. That also has been steady for a long time. Superior, Wis., was using 47 gallons per capita in 1914.

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Questioned by Master.

Portland, Oregon, is not in my list. I looked at some Portland reports this morning, and it is something over, I think, 110 gallons per capita. It is partially metered, but in greater part not metered, and it is a place where they have considerable summer rain.

(Here ensued a discussion among Counsel as to the powers vested in the State Railroad Commission in regard to the regulation of service).

Mr. Hazen: It would have been very much to the company's advantage to have put on meters years ago; it was not able to do it because of the rules made by the Board of Supervisors. Those rules are the ones that prevented the metering, but it has been allowed consistently by the Railroad Commission, and the work of putting on meters has already been begun, and I don't think it will ever stop. The Peoples Water Co., across the bay, carried out the same policy some years ago, with the result that they have gotten along with the sources of supply which they had, and which otherwise would have been inadequate 10 years ago, and they are supplying between 50 and 60 gallons per capita at the present time. If the metering cannot be done, the consumption would increase faster, and the second Calaveras installment would be undoubtedly metered within the 12-year period which I considered, so that instead of having one step to finance within that interval, it would be two.

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With respect to the Tuolumne supply; if it is a fact that I ignored in my calculation that the other bay cities would be takers of this water, nevertheless I have some ideas in regard to that. Of course it may be that the cities across the bay will take it, but if the Peoples Water Co. has reserve sources which will permit its output to be

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doubled, the cost of the additional water within that limit to the bay cities, either to the Peoples Water Co., or to the people living over there, if they should take the works, would be only a fraction of the cost of an equivalent amount of Hetch-Hetchy water, and I have an idea that the people are sensible enough to use the cheaper water first.

8467 If it is a fact that the government of the cities across the bay joined with San Francisco in its petition for the Hetch-Hetchy grant, it would be some indication that at some time they intended to use this amount of water, but it seems to me that that time is a long way in the future. We have here an urban community, and we have certain local sources of supply that are in use and that can be developed, including the reserve supply of the Peoples Water Co., and the Alameda system, and I should be disposed to include also the water from the Coast streams, although that has been excluded from consideration; all that water can be, and naturally would be, and I think ought to be developed and used first; when that water is gone, the whole surrounding country has not any more water to give up. If San Francisco is to be a big city, like the cities on the Eastern Coast, in another generation or two, it is going to need a very much greater water supply. The idea of blocking out a supply from the Sierras, and holding it in reserve, is, I believe wise, but when it comes to the idea that that water is going to be an element in the local market in this generation, I do not believe it.

8468 If you were to assume that there would be a market for 165,000,000 gallons per day on the first installment of the Hetch-Hetchy system, at an estimated cost of about \$40,000,000, exclusive of the distribution system, and ignoring operating expenses, and also assuming that the point of delivery shall be to the distributing reservoirs in San Francisco, it would make the cost of water \$242,000 per million gallons capacity. On that assumption it would permit of adding some capitalized operating expenses without coming anywhere near \$700,000 per million gallons capacity. Of course, I don't accept the assumption. I don't think for a moment that 165,000,000 gallons of water per day from the Sierras can be delivered at the distributing reservoirs in the cities for \$40,000,000. It could not be done.

8469 I don't think that would be substantiated by the Freeman estimates. I think if you were to look the Freeman estimates over, you would find there was no allowance for land, no allowance for rights, a wholly inadequate allowance for overhead, and no allowance for interest during construction; that the water was left over at Irvington, and was not brought into the city; you would find that the Freeman estimates all the way through were on a scale for which the work could not possibly be done at the present time.

If you were to get 165,000,000 gallons, and it were to cost \$700,000 per million gallons daily, that would take \$115,500,000 to ac-

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

comply delivery at the distributing points. My suggestion of twice as much cost was for an equivalent quantity of water. There would be the undoubted economies of operating on a larger scale that would come into that to modify it. To make it comparable, it ought to include all the land and all the rights, and all the expenses and all the interest, and all the delivery into the city, and the capitalized operating expenses.

Assuming that his Honor will find in this case a value for rate fixing purposes, and a rate of return that would be the minimum that the rates must yield in order to be non-confiscatory, then the sum of \$40,000,000 is not the value which his Honor should find for rate fixing purposes. It is a matter of definition. It seems to me that the full value of the property of this company, used in supplying water, must be worth in the neighborhood of \$45,000,000. That, of course, rests upon my own examination and appraisal of the structures, and the figures which I get from the real estate and water rights people, and which are not my own. Taking it in that way, it seems to me that the whole value of this property is made up of the \$40,000,000 which I have used as the rating base, as a base for discussing fair rates, and in addition includes the going value, and I shall include the paving over the mains, because I think that adds to the value of the pipes, and is part of the value of the pipes; and it would include the Calaveras construction to the 31st of December, 1913, which was part of the property which the company owned, and was acquiring for the benefit of the city. Those are the principal items. I think there are one or two more. The \$40,000,000, considering the matter broadly, refers to the properties that are in use.

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Questioned by Master.

Mr. Searls asked me in regard to a rate that would not be confiscatory, and that, I understand, is relating to the federal constitution, and that provides in making the calculation that is necessary to that—I understand that it has to be made on the full value of the property; now, in considering what are fair rates—and that is what I was considering in making the \$40,000,000 base—it seems to me that other things besides the full value of the property may serve as useful steps in the calculation. I have been disposed to feel for a long time that in discussing rates other considerations than the full value of the property were property, and ought to be used. For instance, with Merced, the Merced has a certain value; it is estimated it can be sold for a certain amount, and if that estimate is correct, it is worth that; but in my judgment the amount for the Merced lands under the conditions that have come about, is not the proper base to take for fixing rates, and I substitute another figure which is arbitrary, and which is less than the full value.

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For the purpose of that discussion it seems to me that it is fairer

and better to use a figure that is not full value. When it comes to going value, much the same statement can be made. Going value represents, in my judgment, an undoubted element of value, and a large element of value, but it is very difficult to estimate it in any close and satisfactory way. The difficulty in estimating it has been perhaps responsible, more than anything else, for the disposition to disregard it, because it cannot be accurately estimated. But it seems to me it does exist, and it has to be recognized. I am disposed to think that a fair way of handling the matter is to exclude the going value from the rating base, but in connection therewith to use a higher rate than would be used if it were included, and so, to that extent the rating base is less than the full value of the property.

CROSS EXAMINATION BY MR. SEARLS.

8472 If you want to use \$40,000,000, you must use a certain rate of return, and if you use \$41,000,000, you must use some other rate of return. I should say that for perhaps all of this property that a 7% rate of return on the \$40,000,000 base would give the company just compensation for the use of its property. There are a good many things that have to be considered that I know about in a general way, but I have not studied that end of it particularly in this case, because I have understood that bankers and men who were familiar with rates of return in this neighborhood would be depended upon principally for that. In a general way, the fair rate is made up of what represents the interest on the money that would produce the plant, and a profit. A profit is necessary. The business will not go on without it. I cannot do any better than to refer you to John Stewart Mills' Political Economy for a statement of the necessity of a profit to make any business go continuously. Then there is an element of risk to be considered, and which is not sharply defined from either the interest or the profit. If the company, for instance, owned \$20,000,000 worth of land, and mortgaged that land to get money to build the structures, the borrower would take very little of that risk; practically none of it; he would lend at what represented the interest on the money. If, on the other hand, the company did not own the land, but went to float a bond issue, and built a plant, the bonds being secured by the plant to be built, the lender would take a good deal of the risk of the enterprise, and the interest rate would be higher, so the element of risk is frequently tied up, and becomes part of what is considered the interest rate.

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Then there is another side to it; the risk is the possibility of something happening to destroy the property or reduce the profits. Those things may happen or they may not, but if they do happen, and the losses are great enough, the company goes under, it is bankrupt, and closed out; if, on the other hand, the company is successful, and

the troubles represented by the risks do not materialize, whatever amount may have been assigned to risk as the business went on, is ultimately carried into the profit, and so, examining the history of a successful enterprise, there is a sum that has grown out of the operations, through a term of years, which is classed as profit, and which in reality, in part, was compensation for the risks that were carried as the work went on. The risks in an enterprise of this kind are real; one of them is the earthquake risk. I don't know just what this company lost as a result of the earthquake and the fire, but the approximate information that I have received is that it was somewhere in the neighborhood of \$2,000,000. The fact that this enterprise lost such a sum, and it is likely to lose another such a sum at any time, is an element that is to be considered in a local rate. It differentiates the situation here somewhat from the situations in other cities where that risk either does not exist, or is not recognized.

Then there are the risks of adverse legislation or litigation, unreasonable regulation of rates; those are real risks, and they raise the interest rates, they increase the cost of the service to the company. Those are in addition to the ordinary risks that go with any business enterprise, and which are always present. On the land the risk is much less, because the land is stable, its value may go up or it may go down; at any rate, there is much less risk. I have the feeling that perhaps a consideration of an equitable rate on the whole property would make some differentiation and apply a higher rate to structures than to the land. How those matters would all work out I think perhaps some one else can tell you better than I can.

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Questioned by Master.

I should make a difference between rating base and sale value, as I made a difference between the rating base and the full value. My idea is that in the natural course of events with an enterprise of this kind, the rate of return has to be greater than the interest rate in order to make the business profitable. When the business is started, it is started under a contract which may be an implied contract only, not reduced to writing—that the owners of the property are going to be permitted to get a fair rate of return. That fair rate of return being, I should say, one that was sufficient so as to make it certain that new capital would be available to prosecute the enterprise if it were to be taken up at that time. That rate of return is more than the interest rate. When the business becomes established, and the profits are made, and the rate of return is reached, the property is more valuable, it is worth more than the investment from the investor's standpoint, because of this extra rate; it seems to me that if the property is taken, it is worth not only what it costs as represented by the cost of reproduction, but also a reasonable profit. That profit may be considered as a profit on building the enterprise, as a contractor's profit,

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if you like, or it may be that it is equivalent to the capitalized worth of the reasonable profit the company may hope to earn in continuing the business as they are rated by the investing public.

A very good illustration of that is furnished by the London Water Companies, and other English water companies, because they have all been under the same laws. With those the rating base is fixed by law, and did not depend upon any valuation of the properties. For instance, in the earlier securities issued by them they were permitted to earn 10% if they could; they had no right to 10% unless they could earn it with rates that were otherwise reasonable, but they could go on and charge whatever they liked up to the point where they earned 10% on their common stock. When they went beyond that, the rates were automatically reduced so that the earnings would not exceed that. As time went on and the business became more stable, and other securities were issued, sometimes stock, and sometimes debentures, as they call them, the rates were limited to less than 10%—to 7%, and varying rates, until the last ones were 4%. The amounts of those securities were the rating base always. The companies had the right to charge what they liked up to the point where they could earn the returns that were permitted by law on these several securities. When it came to the sale of those properties, no inquiry was made as to what they cost, or what it would cost to reproduce them; the only inquiry was as to what sum of money it was necessary to pay to the companies so that their stockholders could invest that money and get investments that would pay them the same annual return that they received in dividends and coupons from the companies; in other words, the value of the properties was taken as the investment which would give the same return that these properties actually did give. Under that procedure the sale value of the properties was very greatly in excess, perhaps double the rating base.

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If you were to suppose that I owned these works, and they were rated at \$40,000,000 value, and the legal rate of return was 7% on that value, and assuming that you wanted to buy these works from me, and I asked \$45,000,000; I think the normal condition is that you might be willing to take it at a less rate of return. When a business is established and going, and earning a certain revenue, it is normally worth to the investor what that income amounts to, capitalized on a rate of return which practically is measured by the rate of return on other investments of equal figures of securities, and that rate of return is normally less than the amount which a company has to have the chance of earning, if it can, in order to induce capital to go into an enterprise of that kind; in other words, if you want to build the Calaveras works, and you want people to put their money into the enterprise on a chance of earning some rate of return without any guarantee that they will earn it—simply on a chance—we have to make

that chance 7% we will say. Now, when the Calaveras works are built, and if the enterprise is successful, and it earns that 7% on what it cost, and is established, then the man on the street will capitalize that income at 6%, and the plant is worth 1/6th more than what it cost. That, it seems to me, is the normal condition of an enterprise of this kind.

It seems to me it is experience that the rate at which income is capitalized in an established business is a good deal lower than the rates that would have to be shown reasonably probable to induce money to go into a new enterprise. It seems to me that the fair rate of returns is not what the going business can be capitalized for, but it is what one, taking up the enterprise, would have to be allowed to earn if he could make it attractive. Of course, if the rating base and the value were identical, then the argument would be in a circle, and it would be worthless, because the value of the property would increase as the rates were higher, and then the rates could be raised to go with the property. That does not lead anywhere, we cannot use that. To set up what it would cost to reproduce the property, or to reproduce that part of it which we include in our rating base, and then to say that a rate sufficient to induce new capital to go into the enterprise, if it were to be undertaken, is a limit to the earnings when reckoned on that, it seems to me that is an entirely logical procedure, and in accordance with the facts in the case. That gives us a basis for getting at it that is sound.

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They are pretty difficult subjects. What I have been giving you is just my speculation in regard to it. It may be different from what someone else might put in.

CROSS EXAMINATION BY MR. SEARLS.

I think there is a difference between the rate which would induce new capital to invest in the creation of a new plant, or the extension of an existing plant, and the rate that would induce capital to buy the securities of an existing plant, or to maintain those securities at par. To illustrate that: You can buy the stock of the New York Central Railroad, paying 5% dividends, for a little over par at the present time. That means that there are people who are looking for a conservative, and as they regard it, safe 5% investment of that kind, but I have not any idea that if the railroad were to be built you could find anybody who would subscribe money to build that road with the idea that the dividends were going to be limited to 5%.

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I have made no estimate of what the total investment of the Spring Valley Company will be by the time the total development of the system is made. I made no estimate for the addition of the various installments of the Calaveras works, and the construction

of the other reservoirs; I made only a partial estimate for the second installment of the Calaveras, and no estimate at all for the others. I think that the 12 years which I brought into the schedule was as far as it was wise to carry it.

Questioned by Master.

I did make an estimate for 12 years, leaving out the Arroyo Valle and the San Antonio, as they would not be needed within that period. There would be a great many expenditures before the whole capacity of the sources were brought into use; there would be addition of pipe lines, distribution systems, and reservoirs. I don't think it would help us to try and go too far into the future with these things.

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CROSS EXAMINATION BY MR. SEARLS.

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The distributing reservoirs, the Chestnut Hill Reservoir, and the Spot Pond, in Boston, have no watershed at all. The suburban population goes right around them, and what little watershed they had has been cut off by embankments and drains so that no water from the inhabited area comes to the reservoir. It is similar to the work that has been done at Honda, carrying the drainage by the reservoir. These Boston reservoirs are earthen reservoirs, and it was possible to cut off the drainage. These reservoirs produce no water; they are simply points to which water is brought and from which it is distributed. I cannot say whether they are concrete lined for a certainty, but I think some of them are. Those that are not concrete lined have some kind of stone paving. The natural watersheds have been excluded there. Of course there is a little slope between the road right on the bank of the reservoir that drains to it. It is very narrow. There is no watershed left tributary to them. The percolating water would be excluded from the natural watersheds by building drains on the outside that hold the water level outside lower than the level in the reservoir. The Chestnut Hill Reservoir is pretty well up to the top of a hill. Spot Pond is also at a considerable elevation. It is a natural pond; it had a very small natural watershed, and that was carefully cut off when it was taken for a reservoir.

All the land about the storage reservoir of the Boston water supply was bought or condemned for quite a wide strip around the reservoirs, and around the streams; the population living in the immediate neighborhood was moved off. The more remote parts of the watershed has a population upon them. There are some communities on the older Boston watersheds where sewers have been provided, and the sewage has been taken entirely off the watershed.

I do not think that the Lake Merced Reservoir properties which are going out of use by installments are quite a corresponding proposition to the bringing of the new construction into use by progressive

installments, and of charging rates on them somewhat in advance of the time they come into use. In charging rates on property in advance of use, my thought was only this, to bring the amount spent for construction into the capital account when it was spent, instead of delaying it and bringing in the larger amount, including interest, at a later date. I don't think it will make much difference in the long run which of those two methods is followed. I used one for the purpose of calculation, but I am perfectly satisfied to use the other if you prefer it. When it comes to marking off the value of land that is in use, because it is going to go out of use some other time, seems to me is discarding part of the value of the property for which no return shall be given; it seems to me that is a different matter altogether. If we look at it from the standpoint of maintaining the rate without charge, and disregard the equity of the procedure, I think that your point as to why it would not maintain the stability of the rates if you sort of compensate the two, is well taken.

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In a general way—referring to the Peninsular reservoirs alone—I approve Mr. Grunsky's assumption of 10 to 1 as between reservoir and adjoining watershed values. I had never thought it out in just the way he presented it, and I don't suppose I would have thought of that way if he had not suggested it, but aside from that, the reservoir lands, in my judgment, are ordinarily and normally very much more valuable than the watershed lands. It is more difficult to acquire them; one is more apt to have to pay high prices for them, and they are apt to be the most valuable land, naturally; they are the lands that give the control of the situation. The reservoir lands are very much more valuable in my judgment ordinarily than the other lands; just how much more valuable, and how to estimate it, is a hard matter to get at.

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I do not think that I stated in my testimony in the Denver rate case that it was my experience that reservoir lands could be bought for from two to four to one as compared with the average watershed lands. I don't recall what my testimony was in that case.

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Questioned by Master.

I do not necessarily adopt 10 to 1 as the ratio in which the reservoir lands should be worth more than the watershed.

CROSS EXAMINATION BY MR. SEARLS.

I think very likely I might have said in my Denver testimony that the cost of acquiring reservoir lands ordinarily would be from 2 to 4 times the ordinary sale value of the property, because that would be in line with my experience, but that would not be comparing reservoir lands with the watershed lands. If reservoir lands are worth say \$1,000, that would be very much more than the watershed lands adjoining, but the company would pay from 2 to 4 times \$1,000 to get it if it was worth it for other purposes.

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Questioned by Mr. Greene.

My practice of figuring reservoir land is different from Mr. Grunsky's, and that would have to be taken into account in considering how I do usually handle that matter. Mr. Grunsky has taken the reservoir land as the land actually covered with water. My practice has been to consider not only the land covered by water, but all the land that was necessary to build the works and control the situation, which ordinarily would be about twice as great an acreage. That is a difference in practice, but it does not necessarily mean any difference in final results. It would mean that if Mr. Grunsky used the larger area, instead of getting the ratio which he did get, he would have gotten a lower one for the same conditions.

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CROSS EXAMINATION BY MR. SEARLS.

I have accepted figures which were given me on the value of the company's water rights. Water rights are differently defined. From my standpoint in the construction of waterworks, water rights represent all that it is necessary to do after you own the land to build the works before you can divert and use the water. In waterworks business it practically means buying out and settling with all the riparian owners, and all the people who are injuriously affected by the procedure, or who can make any showing on any ground that will extort damages from you. As to whether I would value water rights in addition to the land if the company owned in fee all the land in the watershed from the sources of the supply to its natural outlet in the ocean, would depend upon whether there was anyone else that would have a valid claim on the water, and could stop your operations. If you owned all the land that controlled all the water, so that when you built your structures you could take it off, and nobody would have a right to stop you, then there would be no further water right.

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As to whether, after I have valued the water right, I would consider it was necessary to go and buy out all the riparian owners in addition, or whether the possession of the water right in itself includes that: I will have to answer that with respect to the different parts of the system separately. With respect to Merced and the Peninsular works, I should say it was a complete right. I will assume that the company has the undoubted right to take all of the water except the amount of water that is taken from the Peninsular works by San Mateo and others, and that I spoke of as a first mortgage, and which is excluded from consideration because it is a first mortgage, and that amount has to be satisfied first, and it is satisfied, and does not otherwise come into the calculation.

With respect to the Alameda Creek, I should say that the figure which I used is for a partial right, and not for a complete right. The rights that are being exercised by the company during the period

covered by this discussion, and the additional right which the company holds, and which it will use in the complete development, but the additional rights, if any, which other people hold, and which will have to be extinguished before the whole supply can be used, are not brought into the estimate. In other words, the only water rights that I believe should be valued here, would be the water rights in use. The more I hear and find out about the water right question, I am convinced of the correctness of the idea that there is not any essential difference from the waterworks standpoint between water rights in California or in Massachusetts or New York; there may be some difference in the relative value, but the nature of the right is exactly the same, notwithstanding the difference in the laws. 8487 A

On page 29 of my Exhibit 164 I have included Calaveras water rights not yet in use at \$2,500,000, but they were not carried into the rating base. I don't see that it follows from that that the rights the company have in Alameda might be less valuable than around the Peninsula; when the Alameda rights are complete and in use, they are undoubtedly very much more valuable than the rights of the Peninsular system, but they are only partially in use at the present time. It is comparing a part of one with the whole of the other. Taking the parts that are in use, I think you may consider those as complete water rights as against all the world for the purpose of this discussion. If the riparian land which is valued had no other use, I think in principle it would be true that if you valued them in addition to the water rights you would be duplicating the valuation; I think that matter would have to be considered on its merits. The only riparian lands that I brought into this calculation are a few areas that I used also for other purposes, and which I should consider in use even if they were not classed as riparian lands.

The Master: In other words, Mr. Searls, to get definitely to the point, Mr. Hazen referred yesterday to certain lands below the Calaveras Dam, which he designated by the title "Calaveras riparian lands", if I recall it; riparian lands \$63,700, and that would include Parcel 250. Your point is that if he also adds \$2,500,000 for water rights, he is duplicating to the extent of \$63,700. 8488

Mr. Searls: Assuming that he has valued in his \$2,500,000 a complete water right, which he says he has.

Mr. Hazen: And assuming that that \$2,500,000 comes into my rating base; it does not come in. I have not any water rights in my rating base for Calaveras. This Sunol-Pleasanton system did not include water rights on Calaveras Creek. I put in the figure for the Calaveras rights, but I did not bring it into the calculation.

Questioned by Master.

If I had included \$2,500,000 for water rights in Calaveras, then I would throw that \$63,700 into the rating base as being watershed for the Sunol drainage area. If it did not have the other use, if it

was below Calaveras, and was not otherwise connected with the system, I would accept Mr. Searls' point, and say it was included.

8489 The classification is rough and approximate, because these parcels 250, and the Hadsell Ranch, contribute to the supply from the various sources. There is not any hard and fast rule. I classified them as it seemed to me in accordance with the proper use of each parcel. It may be if I were to do it over again, and debate it, I might change some of them.

CROSS EXAMINATION BY MR. SEARLS.

8490 The water rights in the Sunol-Pleasanton system, \$1,850,000, I have included in my rating base, and I refer there to the water rights in use at Sunol and Pleasanton, and to the rights to divert the water from Alameda Creek. I figured 20,000,000 gallons a day, \$2,000,000, and then deducted the structures in the Niles Aqueduct. That 20,000,000 gallons a day does not include the water of Calaveras Creek; it only includes the water now used through the Alameda pipe line. Some of those waters come from Calaveras Creek into the Alameda, and through the Sunol Filters, but as far as Calaveras water comes by Sunol, it is not important at the present time; some of it undoubtedly gets into the system, but if it did not get in, an equivalent amount of water from one of the other streams would get in. Diverting the whole of Calaveras won't affect this water right that is in use, and for which this sum is placed. This 20,000,000 gallons is all the water which the company takes from the Alameda system as of 1913, and it represents the sum total of the rights in use from the Alameda system.

8491 I don't think I have valued land which is purely used for riparian purposes in addition to these water rights in use. I have not intended to. If all the land above Sunol is used purely for the protection of riparian rights at Sunol, it cannot have any effect on those, as it is above them. The Sunol water rights relate to the possible diversion of water at, or below Sunol. I expect that the company would also be able to enjoin anybody—a competing company—from appropriating and diverting water above Sunol if it had these water rights. We will assume that the only use that could be made of the water above Sunol would be what little use could be made of it on the farms on the floor of the Calaveras Valley. For the purpose of protecting the Sunol riparian rights, there is not any justification for including the value of those lands, and there is no justification in including them for protecting the Sunol water rights.

Mr. Greene: I think you misunderstood his use of the word "riparian". That referred to the Calaveras. He said he called those lands riparian lands because their most important use after Calaveras would be put in use, would be as riparian lands in connection

with Calaveras, but that actually they are a part of the Sunol watershed.

Mr. Searls: I am endeavoring to ascertain the function they perform at present in connection with water rights that were in use in December, 1913.

Allen Hazen: We don't claim any Mr. Searls.

8492

Questioned by Mr. Olney.

Mr. Hazen: So far as the riparian rights of Sunol, and these riparian lands above Sunol, and between Sunol and Calaveras, is concerned, they do not come in, and do not affect the situation. I have, however, included these particular lands in getting at my rating base, because they are Sunol watershed lands, and the control of the lands contributes to the protection of the quality of the Sunol water, and I should consider the ownership desirable from that standpoint if the other did not exist.

Questioned by Mr. Searls.

It protects the Sunol water by giving the company control over the lands; it makes it impossible for the owners to do the things that they otherwise might do that would tend to pollute the water. I don't know whether stock has been run over the Calaveras Valley and has access to the streams everywhere, but I will accept that as being so. That tends very slightly to pollute the water. The fact that the water passes through the filter beds at Sunol would purify it of any such contamination in great part.

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Mr. Searls: I want to refer to the report of the Advisory Board of Army Engineers, made to the Secretary of the Interior, in which report the Army Board made an estimate based on Mr. Hazen's original figures of the cost of bringing in first 133,000,000 gallons daily, by multiplying his total estimated cost of intake, and the pumping stations, filters, reservoirs, and so on, by 133/60, and then adding 15% for contingencies, leaving the distributing reservoir at Oakland at its original price, and lands for rights of way, and various plants, at the original price, and tunnels at the original diameter of 12.8 feet, which I rated as having a capacity of 400,000,000 gallons daily, and they get by that process an estimated construction cost for the 133,000,000 gallons daily plant of \$19,679,000, as against Mr. Hazen's original estimate of \$38,029,900, with a capitalized cost for raising this portion for 200 feet added, making a total of \$39,404,000 for 133,000,000 gallons. I invite any criticism you have to make on this calculation.

Mr. Hazen: In the first place, this is not my estimate; I never saw this or heard of it, until I came out here and came across a printed copy of it. How far it may be based on my estimate, I don't know. I notice that it speaks of tunnels 12.8 feet in diameter, 400,000,000 gallons capacity. I know I never estimated on any such tunnels. Where this estimate came from for that item, I don't

8494

know. Steel pipe 7.75 feet in diameter is the next item; I never estimated on any steel pipe 7.75 feet in diameter. That estimate is evidently not based on my figures.

CROSS EXAMINATION BY MR. SEARLS.

8495 My estimate for the Sacramento plant involved the construction of several items of the plant which would carry a heavier capacity. With respect to the filters, I stated the nominal capacity of the plant is 75,000,000 gallons per day, allowing the full capacity to be maintained with several units out of commission, and that represents the ordinary practice; if you are going to supply 60,000,000 gallons per day, you ordinarily need a 75,000,000 gallons filter capacity.

On page 325 of the printed report, the Oakland Reservoir appears for two installments, 120,000,000 gallons capacity \$42,000,000; for three installments 180,000,000 capacity, \$60,000,000. Those figures do not include the cost of the pumping station in the city to lift it from sea level to the Honda level, and the main pipe connections, and the capitalized operating expenses; and interest during construction is also omitted; those would have to be added. If 60,000,000 gallons cost \$700,000 per million gallons daily capacity, I think a plant three times as large as that would cost somewhat less. I should think perhaps \$600,000, as a matter of quick judgment. I don't know just what it would give you, but it would be somewhat less in proportion.

8496 Questioned by Master.

With reference to the Calaveras project, the \$1,170,000; that is to the first of January, 1916; it is about \$550,000 to the 31st of December, 1913. The greater part of it occurred during the year 1913.

8497 Mr. Greene: We certainly shall contend, your honor, in reaching the Alameda value of the properties, that expenditures made at Calaveras up to the year 1914 ought to be taken into account, just as we shall contend that going concern should be taken into account in working capital. Mr. Hazen has not included it in his \$40,000,000; in other words, he has gone his own course on that.

Questioned by Mr. Searls.

Mr. Hazen: I presume that all the Lake Merced water that is used is filtered before it goes into the city system; that has not been true until recently. I would not want to be understood that the filtration is the equivalent of the filtration that is used elsewhere; it is not.

Questioned by Master.

8498 I would not quite accept my statement that the typhoid bacillus is the only pathogenic bacillus that you have to look out for in watershed matters. The quality of the water seems to affect the health of the community and the death rate quite outside of the typhoid rate. I don't suppose that the ameba is an element in the

situation here; if it is, I have not heard of it. I have not thought of it being possible here. I think it is probably true that so far as the pathogenic bacteria are concerned, the Lake Merced sands will keep them from the water, except as they might be washed over the surface. As far as the drainage actually goes through the fine sand, there is not a danger of that passing. The ameba is said to go through the sand, but I don't think the typhoid germs would.

Of course it is true that you can take straight sewage and sterilize it, and people can drink it and not get typhoid fever, but as a practical water supply business, I don't like to recommend people to use water from an area where there is too much population. I would say that there was too much population on the Merced area now.

My statement that water draining a region of that kind will carry more nitrogen, and it becomes less desirable for domestic supply, applies to populated regions, but not to unpopulated regions. The nitrogen comes from human fecal matters that get into the soil from the lodgings of cess-pools, for instance. Aside from the possibility of carrying pathogenic bacteria, water supplies drawn from thickly inhabited areas deteriorate materially in quite a number of other ways than from increasing population. On that ground alone I would advise the company to retain the entire area so long as it is used as a source of supply, even if the other was not valid; that is to say, if there were not any risk of transferring pathogenic bacteria.

Questioned by Mr. Searls.

I think there is altogether too much population on the part of the Merced area which the company does not own for the good of the supply at the present time. I think if the company had sold off part of it there would have been more population than there is.

Taking Parcel 250, at the head of the Alameda Creek valley, below the dam, I should not think it would be comparable to the case of city building lots; what might happen there would be a ranch and ranch houses, and perhaps picnic grounds, and that sort of thing. The more land the company controls on the watershed area, the less likelihood there is of pollution. If they could own it all, of course that would be desirable; they do not own the whole of the Alameda shed, they only own a comparatively small part of it. The more they own, the safer they are.

Questioned by Master.

The section over on top of the peak, and which nobody visited when we were out on that trip, and which Mr. Olney pointed to as the San Antonio watershed, just tends to control the area. The tendency is for cities and companies owning water supplies of this kind to buy those lands as fast as they come on the market, and to hold them. The City of Newark has bought the greater part of a watershed area, and is acquiring all of it as fast as people will sell it

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at reasonable rates. They think the few million dollars they will spend in that way will safeguard the water supply for the future. The relative per-acre cost plays a great part in that. In the Little River supply, a good deal of land, I suppose, would be appraised at \$5 an acre, and the Board made it a rule that anyone who wanted to sell for \$10 an acre could get his money at any time. They are gradually getting a great deal of land. If anyone wanted \$15 an acre, he could not have it. A great deal of that purchasing is done with reference to the future needs, but it contributes to the safety of the supply at the present time.

8502

(Certain corrections noted in the transcript.)

Radle

Witness: F. A. RADLE for Plaintiff.

DIRECT EXAMINATION BY MR. OLNEY.

8503

I have prepared a revised tabulation in lieu of the exhibit that was presented here, and subsequently withdrawn. This tabulation is upon the same lines as before, and I have endeavored to arrive at the value of each section of the various rights of way upon the basis of abutting property values, and with severance and other damages added to that. I did not include anything for expenses in getting the rights of way. The total value which I have placed on the particular portions of the right of way are the amounts which in my judgment you would have to pay for the property.

In this amended tabulation there has been an elimination of some properties heretofore appraised as real estate holdings; there has been practically no change in the right of way values, only where acreage lay between subdivisions, in a few instances I have changed that acreage.

(Radle's amended tabulation in re rights of way was introduced in lieu of former Exhibit 122, and was marked "Plaintiff's Exhibit 122".)

8504

DIRECT EXAMINATION BY MR. OLNEY.

Taking page 1, item 7, I have a severance damage of \$300; there were three fruit trees there, rather poor, and five pines. My value of those on residence property would be about \$50 apiece, and the shrubbery, making a total of \$300. The \$45 damage in the next item is for four gum trees, and five cypress.

Referring to items 9 and 10, the interlineation under the word "remarks", \$750—50 by 100, means \$750 for a lot 50 by 100 feet, and that is the basis upon which I made the appraisal, and that is true throughout this tabulation.

Taking No. 9, my basis for the \$750 for a lot 50 by 100 was by interrogation of the property owners, and the real estate people in

that community, and then from that I made my own deductions. I looked at all of this property, there is not any but what I have seen now. 8505

Mr. Olney: There is no substantial difference between Mr. McDonald and Mr. Radle on page 2.

Mr. McDonald: Where there is no width I allowed 14 feet, the same as the adjoining property, the width of the adjoining right of way through the adjoining property. 8507

DIRECT EXAMINATION BY MR. OLNEY.

Mr. Radle: It is my experience as to the width of property which was used or necessary for the installation and the subsequent maintenance of a pipe line, that 25 feet is general considered acceptable. In condemnation we have always been allowed 16½ feet, no smaller. I took 25 feet here where I had no data covering the widths. If you have a pipe line running through a field that is flat and level, and there is no definite width to the right of way, from one to two rods is used as a general rule in construction; it does not matter much about the size of the pipe, but if it is a 36-inch pipe, I assumed that they would use more ground than that. From my experience, I assume 25 feet is as small a width as a pipe can be put in at as a practical matter. 8508

Referring to item 2, on page 7, I have allowed \$314 on account of severance damage for a trestle; that trestle is an obstruction, it is a boxed pipe. I added 25 feet on one side; that is up against the county road, and is a severance to the abutting property. When I say I allowed 25 feet on one side, I mean that I allowed 25 feet, and then took the value of the abutting property and multiplied it by that acreage. I took 25 feet in this particular case in order to make the approach to or from the property. This is a boxed trestle, possibly 4½ or 5 feet, and you have no ingress or egress across it. The pipe line at this point is just inside the property line, so that the pipe line is between the county road and the major portion of the property, and I allowed 25 feet just inside the pipe line, that is, on the other side from the county road, in order to arrive at a figure for the depreciation of that boxed trestle through there. I allowed that 25 feet in order to get to and from the property. The owners of the property are debarred from the property by this box, and I have made room for a road along there. 8511

Taking item No. 5, Parcel 127: Referring to the map from 21.62 or 64 to 36.48 is a boxed trestle, and as you will notice, it lies back from this county road so as to interfere with the selling of any lots whatsoever. I made a severance of practically 6 acres. It don't quite figure at that; there are 8 acres in the piece, but it does not cross the entire length. By severance of 6 acres, I mean that that is debarred from any ingress or egress on that side of the property. 8512

You can either go over that with a grade, or you can go under it. It is that part of the land from the county road to the back land, beginning with the box trestle, and it is cut off entirely. The 6 acres I valued as the value of the right of way, and I show the value of the right of way based on what is occupied by the pipe. My judgment is that in purchasing the right of way through there, you practically had to buy the whole piece.

8513 Taking page 8, lots 13, 14 and 15, I valued on a basis of a burial lot value, and I got that value from the superintendent of the Holy Cross Cemetery. That is the selling price of the lots. This pipe line goes diagonally through an undeveloped part of the cemetery at present.

8514 Referring to item 32, right of way through the Mount Olivet Cemetery; my value on that is per square foot for burial purposes, \$1.50. I have valued all the cemetery rights of way according to the same method and on the same principle. In Holy Cross they sell by the lot, and not by the square foot. Referring to the last item, 38, on this page, I got my figure of \$916 there by reducing it to acreage. I think I simply used the same ratio there, \$4,000 an acre, and did not put any lot value to it. Taking Parcels 36, 37 and 38, in the Abbey Homestead, which I appraised at \$4,000 an acre, I got that by throwing this lot into acreage. I took the price obtained for the lots as far as we could get them. I think they were all lot prices in this particular instance. I have no lot price, but I have
8515 an acreage price: four times .229 acres is \$916. The decimal .229 acres in the acreage of 100 by 100. I got my \$4,000 an acre taking a lot 100 feet deep, there would be 17 lots to the acre—17.424. That would be at \$250 a lot. On the acreage basis of 17.424 the streets are in.

8517 Wherever I found a house on the right of way, I considered it in the matter of fixing the severance damages. I took it into consideration.

8518 Mr. McDonald: So far as my basic values went, there was very little difference between us, and there was not much difference between us on my acreage value. I had in the first place figures on every acre in regard to the cemetery. I omitted any valuation of rights of way where it was now in a public road, unless I knew first that it had been originally in a private road, and secondly, that I knew the cost, and in that case I simply inserted the cost. Wherever the right of way did not have a specified width, I think with very few exceptions I gave it the width of the right of way immediately next to it. Wherever I found buildings on the right of way, I allowed nothing for severance damage or damages, because of the difficulty in putting in a new line through such a building. All the buildings were in new subdivisions, and very obviously have

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

been put up since the pipe lines were laid. I don't think there were any other points of difference.

Questioned by Mr. Searls.

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Mr. Radle: On page 2, item 20, in the matter of tunnels: In that particular case the damage I allowed was for waste dump in the tunnel bore, and I assessed the valuation for the strip that was purchased for the right of way.

On the Lake Honda Tunnel I appraised that particular right of way upon the 10-foot basis, and based upon a value of \$4,000 an acre. I have simply taken the value of that right of way for tunnel purposes the same as the value of the acreage included in it, and I think that you would have to pay that figure to get it in that locality, because of the building operations that are going on there, and the development. The mere fact that it is a tunnel does not eliminate the hard part of purchasing a right of way, according to my experience. I have never been able to get anything of that nature for less money than the surface value, and that is my judgment as to what you would have to pay in this particular instance.

8520

Referring to the pipe lines across the Lake Merced Tract, I have a map prepared showing those pipe lines, and the station numbers on them, approximately.

8520-8522

(It was here stated by Counsel that Mr. Radle and Mr. McDonald exactly agreed upon the rights of way for the pipe line through the Merced Tract, the figure for the Pilarcitos pipe line within the Merced Tract agreed upon is \$11,302).

On the 8 and 11 foot strip through the western portion of Centerville there are telephone poles, and from that I take it that it is in use for telephone purposes.

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Mr. McDonald: I excluded it as being not in use. There is a telephone line on that 25 foot strip from Niles to Centerville.

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Mr. Radle: That is correct.

Mr. McDonald: I think there is a telephone line over a portion of the Ravenswood-Belmont right of way. There was a telephone line over and across the Tacoma Mill Co. property, and across the Frank Tanning Co.'s property; otherwise I think the telephone is off the right of way.

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Mr. Radle: I agree with that.

Mr. McDonald: I did not make any allowance for the telephone right of way at any point.

CROSS EXAMINATION BY MR. SEARLS.

8527

Mr. Radle: I have bought water pipe lines up to 10 and 12-inch sizes. The rights of way for the lines were in Indiana, Ohio and Pennsylvania. I paid 25 or 30 cents per rod for the oil lines for the Indiana Pipe Line Co.'s right of way. For water lines I paid anywhere from that price up to \$1 per rod. I bought an oil pipe line

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right of way in California from Martinez to the oil fields for the Valley Pipe Line Co. For about 140 miles of it I paid 20 cents a lineal rod, plus the damages. The damages, in so far as they are settled, will probably make an aggregate of from \$2 to \$3 a rod. The balance of the 170 miles ran from 50 cents to \$2 or \$3 a rod for the right of way, plus the damages; it was through vineyards and higher class property. The title we bought on this right of way was an easement in all but three or four cases, and the owner had a right to plow over the ground after the pipe was laid. In all instances of that sort we had to pay damages in addition to the price paid per rod. The element of damage in that case was crops destroyed, and buildings, and teaming in.

8529

The damages incurred during construction is charged to the right of way account. In making this appraisal for the Spring Valley right of way, I assumed a width of 25 feet where no data was available. The advantage of having 25 feet after the pipe is once laid is simply as a protection in delivery, and for patrol duties and repair purposes.

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I made an examination of the titles that the Spring Valley acquired where they bought an easement for a right of way only so far as the papers were available in their office, and where data was lacking on some of the larger tracts, we attempted to find out what was on record. We made an effort to look at the conditions in all the deeds, but they were in such condition that we could not fasten them to the parcel numbers. I believe only in some two or three papers that we viewed was there anything said about the owner of the land having the right to plow over the pipe line and otherwise cultivate the land. I think there is only one instance, and that is on the 100-foot strip near Ravenswood where there was a condition inserted that the owner should have the right to build crossings over the pipe.

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My assumption of value of the adjoining acreage was based on information from real estate men and owners. I took the asking price of this land as a basis of my valuation in very few instances. I made my own deduction afterwards as to what I considered a true market value by just backing those deductions by experience of those values as I have come in contact with them in the years of work that I have followed. I have found invariably almost that a man will take considerably less than he first asks for it.

Taking Serial No. 2, on page 1, I make an allowance for damage to trees amounting to \$195. I am not familiar with the conditions of the deed granting that easement. The matter of \$195 does not come from just the damage to the trees alone. There are two places there where a pipe is boxed for 145 feet. Upon an appraisal for 1913 we found that the pipe was not buried. I don't take into consideration the right of way. I took the conditions extant as of that date. In a case of that kind, where you don't comply with the contract, I forever had my trouble and had to pay additional damage—a severance, or

whatever you might class it. My appraisal is made exactly on what I found, and I found the pipe line there in its present condition, and assumed that it had a right to be there, and not buried. The only thing I took into consideration so far as rights of way are concerned was as to the width, and particularly where there was something of importance, as getting out of the way of ingress and egress; I took the property as I found it. I didn't look over all the deeds. I was informed they were largely destroyed in 1906, and they were not all intact, and so I dropped that phase of it, except in particular instances, spending several days; however, going over what I could get that was of the most importance.

In a degree, if the company possibly had a very imperfect title to the right of way in any particular instance, I ignored that, and assumed that because the pipe was there it would always remain there, and in a degree I did not do that. I was getting at an appraisal report basis absolutely; not as to the existing cost at the time it was put in, or as to the cost of reproduction; I made my values on the existing conditions. I said on my direct examination that I figured the cost of reproducing these rights of way as I found them where they rest today. I am not entering into the possibility of going on another course, or anything of that kind. My appraisal is based on the values as I see it as it stands today.

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My thought of the value as I have placed it here is the value right where it rests today. I am not conversant enough with your laws to state whether you could or could not buy through the Balboa Park today, and I was not instructed as to whether it was a legal possibility to reproduce that line in its present position through a public park.

8533

Assuming that the Park Commission of San Francisco has jurisdiction over Balboa Park, and that it has no authority to sell any part of that park, or any easements in it, and that the only way in which the company could reproduce that line would be to get the permission of the Commission to lay it there, it would have, in my opinion, the value of the cost of removal, and placing somewhere else, which would be practically equivalent to the price I have placed upon it as I found it in Balboa Park.

8534

ONE HUNDRED AND SEVENTEENTH HEARING.
MARCH 16, 1916.

Witnesses: ALLEN HAZEN for Plaintiff.
F. A. RADLE for Plaintiff.

Hazen Witness: ALLEN HAZEN for Plaintiff.

8535 Questioned by Master.

 Lake Merced was used as a supply from 1907 to 1913. The Cresta Blanca dam-site is below the dam-site which the Spring Valley Co. contemplates using, and I presume it might be used by some other holder for rather a small reservoir. That is what I had in mind when I said it would be just as well that the company own it to prevent trouble; if someone should make a small development there, it might make it very difficult for the company to clear the matter up later so that they could use the water.

8537 I think there is a further use for that piece of land below the Cresta Blanca piece. There is a probability that when the Arroyo Valle Dam is built that that land will be necessary, and that other land will be bought with reference to riparian rights on the stream below the Arroyo Valle Dam for quite a long ways. There would be security afforded by the ownership as far as any action by the owners of those particular parcels was concerned. It would not afford complete security until the last inch was bought. It is only one step in the process.

 I do not think I made any allowance for overhead on land, except some expenses that were incurred and included as part of the cost of certain parcels where I took cost; that is a very small matter as far as it may have come in in that way. I think in each case where I took cost it was less than the appraised value. I have not looked up that particular point; I did not pay much attention to that.

8538 The Exhibit "12-H", on the subject of run-off, I think correctly represents my views. I think some of the capacities that I mentioned differ a little from these, but I think they are in general in accordance with it. I think this was made up from some earlier studies that we made, and afterwards in revising the matters with additional records, it seemed to me that the quantities were a little higher than those that were shown by the first studies, and I think some of the figures that I mentioned were slightly greater than these, but the difference was not very great, and is accounted for in that way.

 Questioned by Mr. Searls.

 I refer to the fact that these figures are from 95 to 115 as the total estimated development, whereas I spoke in the other from 100

to 120. Calaveras is shown here as 40, while I have used the figure 45 as the most probable figure; the records are not accurate enough for precision to be reached in these tables, and they are necessarily approximations. When I revised this recently on all the data that is now available, the figure indicated is a little higher than the one I first reached. I did not study that proposition as closely as I should have done for this case if the quantity had seemed to be an important element in the case; the quantities were so much larger than the actual use, or the prospective use in a reasonable period of years, that the exact ultimate matter I did not regard as a matter of much consequence for this case.

8539

Questioned by Mr. Greene.

With respect to the following answer given to Mr. Searls' question with regard to water rights:

"Mr. Searls: Q. Let us take this item of water rights in the "Sunol-Pleasanton system: You have included those in your rating "base, have you not? A. Yes, sir.

"Q. \$1,850,000? A. Yes.

"Q. What water rights does that refer to? A. The water "rights in use at Sunol and Pleasanton, and referring to the rights "to divert the water from Alameda Creek."

I had in mind particularly the right to divert at Sunol, as covered by that figure, and I had in mind that the water right at Pleasanton, if it is a water right, and should be so classed, is of a somewhat different nature from the right to divert at Sunol; that is to say, the right to lower the water level under the Livermore lands is more comparable to a reservoir, and it would affect the lands in the Livermore Valley, and that is something that would have to be considered. That would not have any direct bearing or relation to the diversion of the water at Sunol, and I did not intend, when I used the figure \$1,850,000 to cover the latter right. The latter right is covered by the valuation I put in for the land that the company owns.

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My idea of that figure is that that referred to the diversion at Sunol, and with reference to the properties below Sunol, and any value which there might be to the right to lower the water table in the Livermore Valley is another matter, and would not be included in that.

Questioned by Master.

8543

The 20,000,000 gallons at Sunol represent the pipe line capacity. There might be 50,000,000 gallons coming down there, but only 20,000,000 gallons is now utilized. As a matter of fact, the average amount coming down there is 150,000,000 nearly. The Pleasanton water is part of that 20,000,000 gallons that occupies that pipe, and if the Pleasanton works did not exist, that water would come down Laguna Creek, and would be taken at Sunol as long as there was a natural flow.

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Mr. Searls: Q. Let me call your attention to the language you used on page 8487: "Q. Let us take the rights that are in use: Do "you consider those as complete water rights as against all the world?" "A. I think it may be considered so for the purpose of this discussion. "Q. Then if you valued, in addition to the water rights in question, "a whole lot of riparian land, are you not duplicating the valuation?" "A. If the riparian rights had no other use, Mr. Searls, I think that "matter would have to be considered on its merits, and in principle "that would be true." Then you go on and state that the only riparian lands that you brought into this calculation are a few areas that you used also for other purposes, and which you should consider in use even if they were not classed as riparian lands. I think that language is perfectly clear: Either you were valuing a complete water right at \$100,000, or you were valuing an incomplete water right.

Mr. Hazen: I think it is a complete right as far as Sunol is concerned; whether the right, so far as the company has it, to lower the water table at Pleasanton is a complete water right or not, I do not know; it is a different kind of a right, but it was not included by me in that discussion.

8545

If I had a water right at one end of my property, and my property slopes to the other end, and I run my water down from one end of the property to the other end, I would not consider that I had another water right at that end, and I don't think that I am doing that here in valuing the 12 millions at Sunol, and valuing some more at Pleasanton. As far as I have water rights in mind, the estimate was for the water rights at Sunol; it includes the Pleasanton water; it includes the whole of the 20 millions with respect to all of the owners below Sunol, but this lowering the water table is another matter that is not connected with the quantity of water. That is connected with the position of the water table; it is really a reservoir privilege on that land without being connected in any way with 8,000,000 gallons of water a day, or any other quantity. It is a reservoir privilege, and not a drawing privilege. You understand I am not putting in my testimony on the value of the water rights. I am assuming that, and it is a matter of definition, but I should say that if the definition were extended to include more than I include in it, logically the value would go out. It is a question of stored water as against water that is available part of the year; there certainly is a difference there. Stored water is more valuable than the water that you have to take when it comes.

8546

Questioned by Mr. Olney.

The value which I attach to the water rights which are represented by the Pleasanton lands is in effect the value attaching to stored waters, or to a reservoir of water. If it were not for this gravel deposit which the company is utilizing for a reservoir, it would have had to

build an artificial reservoir to accomplish the same purpose, and buying this land and building the works to depress the water plane and use it, really takes the place of the construction of a big artificial reservoir. It may be that if the company only bought a portion of the land overlying the gravels, and did not buy the rest, that it is not a complete right as against the owners to the east of Pleasanton. As far as it has not, it will have to deal with the owners in the future as occasion arises.

8547

Questioned by Mr. Greene.

In the computations that I made with regard to the expenses of the company, I took my unit as a calendar year, but I think it would make no difference with the essential features of the calculation if the fiscal year were employed. I started to use calendar years in working up some of the data, because that is what I formerly did. I don't know when I discovered that the fiscal year of the company did not correspond with the calendar year, but as I had all my data in that way, I kept on using it that way. The only importance of the fiscal year segregation is because the ordinance applies to fiscal years, and not because the company's accounts are kept that way. I should say that the average for a considerable period in the future would be almost sure to check closely.

Practice and opinions vary on the width of a right of way required for laying a water pipe; widths all the way from 25 feet to 250 feet have been used. I think 100 feet has been the commonest width; that is wider than is actually required for pipe, but an extra width is convenient in laying, and saves trouble where there are special structures, and where the land isn't too expensive, where you do not get into city lots, I think it is common experience that a 100-foot right of way costs very little, if any more than a 50-foot right of way. A 50-foot right of way is frequently used where land is more valuable, and sometimes a narrower one, although I do not think that is very common. I do not know that I could specify a lowest limit that would be practicable; when you get into city conditions, a pipe can be laid through a vacant lot, or between buildings, for a pretty narrow space for a short distance, but for ordinary practice, I don't think anything under 25 feet would be used.

8548

Witness: F. A. RADLE for Plaintiff.

8550

CROSS EXAMINATION BY MR. SEARLS.

Radle

My estimate of damage, \$50 per tree, as indicated on page 1 of my Exhibit 122, is the standard price for a pine tree of that age in a man's dooryard. That pine tree was 18 or 20 inches in diameter, a pretty good sized tree. I am not in a position to say whether that

8551 tree was there before the pipe line was or not; it would have to be removed in order to put a pipe there today. In my opinion it will have to be removed in a reproduction of the line, or it will be injured sufficiently so that you will have to pay for it. The right of way upon the present course would hit the trees sufficiently to cause their death, or they would have to remove them in order to build it in a practical way.

8552 When I come to a right of way which is now in the public road, I value it on the basis that I would value it if it were running through private property, in as much as it was private property before it became a public road, and the road was laid on top of the pipe line because of its existence there. Supposing the pipe line were not there, and assuming that the company could lay the pipe line in that road, the \$10,547 I consider is the value that I place upon the right to lay it in the road. It would cost that to replace the street and put it in order. Referring to page 2, Item 16, boxed pipe in trestle: A part of the trestle as it now rests passes from the trestle to boxing and back again. The trestle is at the upper side of the slide which is there, and which caused the placing of it up there, as I take it, from the position in which it rests. The pipe actually passes over the trestle.

8553 Page 3, Item 29: The pipe line right of way in that place, as I view it, does not run across the back end of the lot right on the property line; it interferes with the ingress and egress to and from the electric plant sufficiently so that it was necessary to run the spur clear around. The records show that part of this was originally purchased from the California Gas & Electric Co., and also from Partridge. The portion in question here was purchased from Partridge, and not from the electric company. I am not conversant with where Partridge's property line is, but assuming that the Partridge property has a back line in common with the electric company's back line, and that this trestle runs right along the back line of the two properties, and that the property, at the time it was acquired, and as it exists today, was held by two owners, I would still say that the element of severance damage exists. Severance means interference with ingress and egress, hauling out of material, disfigurement. I am not conversant with the element of whether the owner of one of these properties has a right of ingress or egress as between the two over the property of the other.

As I find the existing conditions there, in purchasing the rights, we have to take those things into consideration; if you attempt to purchase without considering it from that point, you invariably bring about litigation, and it has always been a method used in all of my training and experience to explain thoroughly what you are going to do, and in that situation you cannot purchase that for any less than the aggregate of which I make here; the land value plus what severance value there would be there, or pay an exorbitant figure for the

land—either way you wish to class it. As the trestle exists, it does cut off access to any person actually using that property, the individual himself. Mr. Partridge could go to the back line of his property, and the electric company could go to the back line of their property, but they cannot go out the front line. This line splits the front line; it is not up next to their line, if I am conversant with the facts. I cannot assume, because a fence is in existence there that it is a property line without going to the records and investigating that phase of it, as fences are not always built on property lines.

8554

Taking page 7 of my exhibit, second item: That is very low, swampy ground, and one end of the trestle on the top is about on a level with the road grade, but the other end I do not think is. It is perhaps true that if anyone were to get access to his property there from the road, they would have to build some sort of an approach in order to get up on the road even if the trestle were not there, but the road would take up and use a great deal of that particular spot of land which I consider is severed.

8555

Mr. McDonald: That deed contained a provision that the pipe line could be carried on a trestle for the first three courses, and that for the rest of the way the pipe is to be kept 2½ feet below the surface, and the surface restored.

CROSS EXAMINATION BY MR. SEARLS.

Mr. Radle: If the company had not carried out the conditions of the deed, it is possible that the owner would not have any difficulty in exercising his right to cross the company's trestle at the point where it was in violation of those conditions.

I have never bought a pipe line right of way through a cemetery, but I have heard of purchasing a pipe line through a cemetery in Ohio. It was done there with the consent of the cemetery owners, and abutting lot owners; it became a drive, they allowing the cemetery people to use it for that purpose, and they keeping it up as a part of the consideration. The rest of the consideration was the buying of the land at the value of the lots. I should say from memory that that strip was in the neighborhood of 50 to 80 rods in length, and the company that bought it did not go out of business after they bought it. It was the Buckeye Pipe Line Co., a subsidiary of the Standard.

8556

In arriving at this estimate, I made no assumption that the cemetery was not there; I took it as I found it, my instructions being to make a valuation as it now exists as of 1913 as near as I could gather it. That being true, I could be governed by nothing but the particular lot prices. The land, no doubt, judging from abutting properties, could have been considered as subdivision property. I do not consider that it could be bought at anything but burial lot prices.

I never looked into the purchase of a pipe line right of way through the Cypress Lawn Cemetery in 1908, and I do not know

8557 whether the company paid the cemetery lot prices for that or not. I am informed that in the Holy Cross Cemetery the lot owners have a 99-year lease, making the lots much cheaper, so that the lot owners could not give title if they owned any of the lands in that way. I did not assume that the Spring Valley Water Co. would have a right to condemn a right of way through the cemetery if the owners should refuse to sell for any price. It might well be that it would be impossible for the company to go through there at any price.

8558 Questioned by Master.

Taking Holy Cross Cemetery; the cemetery is not plotted at the particular place where the pipe line runs through it to amount to anything. That is undeveloped, but it is inside the enclosure of the main cemetery. It is practically a rough field in Holy Cross only so far as this strip is concerned.

Questioned by Mr. Searls.

At Mt. Olivet the pipe line goes right in the greensward. I would say that if in 1913 the company did not own this pipe line, and was going to reproduce it, it is very probable that a portion of the line would be filled with graves. The pipe is in there, and is underground.

8559 At Cypress Lawn it is occupied, outside of the pipe line, from beginning to end I would say. It is owned in fee. These cemetery rights are not all fee rights, I think. With the exception of Cypress Lawn, and on the Baden-Merced branch, there is a deed title there, purchased in 1907 or 1908. Woodlawn is a fee title. The strip through Cypress Lawn has never been fenced, and there are no burial lots over the right of way. They come right up to each side; right up to the border line.

Questioned by Mr. Searls.

8560 Referring to page 7, Item 5; in figuring my severance, where the trestle ran along the property line adjoining the lot, I did not say that I generally estimated the value of the 25-foot width on the property side of the trestle as the measure of the damage. In some instances I estimated 25, and some 50, and on some a great deal more. On No. 5 the trestle runs in the neighborhood there of an average of 75 feet back from the county road, which would spoil a sale of a row of lots through there, and bar ingress and egress from that county road to the balance of that tract of land, in as much as the railroad is on the other side. That condition does not prevail in such a large degree in Parcel 2. The line is not so long there as it is on the other one, and there is not so much land immediately interfered with.

Referring to page 10; in valuing a right of way through city lots, I reduced the lots to acreage. My unit valuation was per lot. If I had a lot that had 1,000 square feet in it, I reduced it to acreage and then put it in lot values, and where lots were severed by say one-third, or the middle, 50%, I took the full value of the lot right straight

through, considering that it is impossible to buy a right of way there without buying the lots. 8561

I did not make an investigation to determine what kind of an easement the company has through the Abbey Homestead and the Union Park lands. In a great many instances I did not go in far enough to check any of these particular places, because I could not get conditions that existed on the property from the loss of records, so I eliminated even that. In a great many cases the only record title the company has is the declaration of ownership. I don't know anything about the transfer of these lots in these various subdivisions, but in some instances where we have interrogated the owners, they said they would gladly sacrifice their lots on account of the pipe being in there, and that if they had known the pipe was in there, they would never have purchased it today; so far as there being transfers since the pipe was laid, I do not know. Even if these lots had been transferred from owner to owner without any more attention being paid to the existence of the pipe there than if it had not been there at all, and the lots sold at full value with the pipe there, I still think the easement is worth, or was worth the entire value of the lot, as it is impossible to buy it otherwise; experience has repeatedly brought that out. 8562

I do not think the company could go in on any one of these lands where the owner has built a house and order him to move his house off so as to get at their pipe, unless they compensated him. You cannot destroy a man's building without you compensate him. That is why I figure my severance. If they owned it in fee, I suppose they could tear the house down if he did not move it. If they owned the fee of the land, and the man went on there, he would be a mere trespasser, but I still think that the easement is just as valuable as the fee in this case. 8563

In cases where I have valued the right of way through city lots, I assume that the lot value is absolutely separate and distinct from the street value, as in the subdividing you won't get so many lots to the acre after streets are laid out. In some localities when the lots are sold off, the man who subdivides and sells includes the value of the land in the streets in the value of the lots, and in other localities he does not. I do not know what the practice is here; so far as my own personal experience is concerned, I do not value the streets in my lot. The real estate man who is subdividing the tract figures a ratio to take care of his street. In the factor which we used you are not getting a value per acre which includes all the street value in that acre. The factor we used is exclusive of the streets. 8564

To take a specific instance, assuming that you went through a lot here 100 feet square, which had 10,000 square feet in it, and that that lot was selling on the market for \$2,000, you would then determine your value per acre by multiplying \$2,000, the value per lot, by 4.3,

which would be the number of lots that could be obtained in an acre. It would be a fractional part of 43,560 square feet in an acre, less your streets. I have worked on the basis of the average lots, whether 25 by 100, or 50 by 100, or whatever way they were apparently subdivided by the various methods we could obtain data as to; then we took that number of lots in the acre, based upon that size; we did not figure on the basis of 100 feet square. Taking a size 50 by 100, 5,000 square feet, you would have 8.712 lots in an acre, and if I am right in my calculation, the streets are exempt from the 8 and a fraction lots in the acre.

Taking Item 40, on page 10; I valued the lots there at \$250, and I have five lots valued at \$1,250; I reduced that to an acreage, \$4,356 an acre, by which I show a fractional part of the acre. The area of each lot is 2,500 square feet.

I simply have taken the number of the lots at \$250 a lot; the acreage value which I have put down here in the column in these cases where I am valuing lots, plays no part in arriving at the price.

Mr. Searls: But when he comes to the next item, the streets in either of these lots, he proceeds to value that street on the same price per acre, although as a matter of fact the value of that street is included in the value of the lot, \$250.

Mr. Olney: Your point is concerned with the right of way which was formerly private property, now a public road.

Mr. Searls: Yes.

Mr. Olney: That may be true; I don't know.

Questioned by Mr. Olney.

Mr. Radle: I take Item 40 for instance, and Item 42, and all these other items, and I get at my price by taking a value of the lot of a certain size, depending on the going size in that locality, and then applying to the number of lots the price of each of the individual lots. I assumed that there were 17.424 lots, 25 by 100, in an acre.

CROSS EXAMINATION BY MR. SEARLS.

Referring to page 11, Serial 53; that pipe line passes along two buildings, and under the best information we could get, it turns and goes along inside the fence. In regard to Item 58 on the same page, the pipe goes diagonally along that planked road in the lumber yard, and interferes with business, and egress and ingress. With respect to the Abby Homestead lots shown on the previous page; I did not consult Mr. Baldwin's or Mr. Hoag's prices on them.

Referring to page 10, an item there of the Metropolis Tract, 9 lots, \$600, total \$5,400; I could not tell you whether that tract was subdivided until 1914, or not, but if it were a fact, and the tract was not subdivided, it would not affect my valuation as it exists. From

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the information we gathered, that was plotted before 1913, so we put it upon the lot valuation that they quoted to us, and made our own deductions from that; in fact, they talked higher prices than the \$600 I put down.

Mr. Olney: Mr. Radle's valuation per acre is a little over half as much as Mr. McDonald's there, and the reason is that Mr. McDonald has assumed a strip probably 10 feet wide through there; his acreage value is higher than Mr. Radle's.

8570

Mr. Radle: Page 12, the last item: It is pretty hard to know where that pipe is located at that particular point, but I assumed it would have to be under the buildings there; they would have to be moved in order to put a pipe in there now. As to whether they would have to be moved if the pipe ran 10 feet distant from them would depend upon the topography.

Page 13, an item of \$500 damage to a hotel; the pipe runs right past the front door of the hotel, and under the platform, as I remember it, and it would interfere with business. I do not think you could get away with it any cheaper than \$500.

I did not find any case in the course of my examination where the company had moved a house in order to lay a pipe, or taken the pipe out from under a house after it had been laid. I presume there are portions of the old Pilarcitos line still in the ground under some of those buildings. It would probably be cheaper to leave it there than to move the house and take it up, but I do not know anything about it in that particular case. I have done that in the past, however.

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On page 22, all of that right of way there is contained in Spring Valley real estate Parcels Nos. 228, 267, and F-239. I don't know whether it is on 228, but we have it on the record showing 228—I don't know whether it is under that or not.

8573

Bane Avenue, Centerville, has never been accepted as a public highway, from information as near as I could get it; the pipe for the major part of the distance there lays over to one side of what was graded up for a road by the promoter who plotted off the land in there; evidently from the fences and indications, and the boxing, or whatever you call them over the pipe, the right of way runs for a good deal of the distance between Bane Avenue and the Southern Pacific Railroad. It does not lie in the main part of the street in any place.

8576

Mr. Olney: Referring to page 30, Item 19; that is not San Mateo Avenue; that is part of what is known as the Ocean View Pumps Tract, and it was valued by all the parties that have testified, that is, by Baldwin and others; it is a part of Parcel 87, which appears on Map 9, and it is made up of a little strip which lies just inside of the San Francisco boundary line, and all of Parcel 87 was valued, and this particular Item 19 is a duplication, and ought to be taken out for that reason.

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Mr. Radle: Referring to pages 32 and 33; I did not see the declaration of ownership filed by the Spring Valley Water Co. wherein they claimed only 10 feet.

On page 40, my account of telephone poles in the telephone right of way in San Andres Valley was based on an actual count of poles.

ONE HUNDRED AND EIGHTEENTH HEARING.
MARCH 17, 1916.

Witnesses: JOSEPH A. LEONARD for Plaintiff.
J. E. GREEN for Plaintiff.
DAVID B. FARQUHARSON for Plaintiff.
F. A. RADLE for Plaintiff.
CHAS. S. McDONALD for Defendants.

8580 (Corrections noted in the transcript).

8581 Witness: JOSEPH A. LEONARD for Plaintiff.

Leonard

DIRECT EXAMINATION BY MR. GREENE.

I reside in Ingleside Terrace, San Francisco, and my business is that of real estate subdivision, home building.

I made an offer for a certain gore property lying between Ocean Avenue and Junipero Serra Boulevard, and adjoining Ingleside Terraces, containing approximately 83-100 of an acre, of \$25,000 cash. That offer was an oral offer. I don't think I ever made an offer in writing. I think, but I am not sure, that the minutes of our meeting authorized me to make that offer.

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8583 Witness: J. E. GREEN for Plaintiff.

Green

DIRECT EXAMINATION BY MR. GREEN.

I reside in Palo Alto, and am in the real estate business, being connected with the Parkside Realty Co., of San Francisco.

An offer was received by the Parkside Company for certain of its properties situated on Sloat Boulevard, comprising approximately 100 acres. That offer was made by Bruce Cornwall, in 1912. Under date of October 17, 1912, Bruce Cornwall addressed a letter to me, stating that he had been offered a tract of land owned by the Parkside Realty Co., in company with Mr. Mark Daniels, and asking a 30-day option for the right to purchase the property; also stating that he could get others to join him in the project, providing the price was

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right and the terms were right. Following that communication I had some interviews with Mr. Cornwall, the result being that the Parkside Co., under date of October 23, 1912, granted him a 30-day option to purchase these 100 acres of land at a price of \$675,000. The terms were to be a payment of \$10,000 within 30 days of the date of the option, and within 30 days thereafter \$35,000 additional, and with this last mentioned payment the company was to give to Mr. Cornwall a deed free and clear of any and all encumbrances. Mr. Cornwall was to execute promissory notes in payment of the balance, the first note in the sum of \$75,000 payable one year from the date thereof, the second in the sum of \$100,000 payable within two years of the date thereof, and the third, \$150,000 payable within three years thereof, and the fourth \$275,000, payable within 4 years. These notes to bear interest at the rate of 6% per annum, interest payable semi-annually, and the notes to be secured by a deed of trust covering all the property. Mr. Cornwall had several interviews with me, as did Mr. Mark Daniels, his engineer. This agreement was an option, and Mr. Cornwall was not bound by the terms of that agreement to take the land at that price; he did not exercise the option within the period specified, and the term of the option was extended verbally for an additional period, and on November 26, 1912, Mr. Cornwall addressed me a communication as follows:

8585

"Mr. J. E. Green, President Parkside Realty Co.,
 "Crocker Building, San Francisco.

"My Dear Mr. Green:

"We find that it will be necessary in order to subdivide and sell
 "the Laguna Puerca Tract to have the present streets within the
 "boundaries of the tract closed and abandoned, and deeded by the
 "city, and new streets accepted by the city in lieu thereof. I, and my
 "associates are willing to purchase the tract for \$675,000, on sub-
 "stantially the terms agreed upon in our memorandum of option,
 "dated October 24, this year, provided your company will cause the
 "present streets to be closed, abandoned, and deeded to you, and cer-
 "tain new streets to be accepted by the city in lieu thereof.

"If this meets with the approval of your directors, I will send
 "you a check for \$10,000, and enter into a more formal agreement, and
 "immediately cause to be prepared, under the direction of Mark
 "Daniels, civil engineer, plans and specifications for the subdivision
 "of said property, showing said new streets, and upon which plans
 "and specifications your petition to the city authorities for exchange
 "of streets will be based. The California Pacific Title & Trust Co.
 "have assured me that the only way that they will insure the title to
 "said property is upon the taking of the procedure outlined here, the
 "obtaining of a deed from the City and County of San Francisco to
 "such portion of the land as is now included within the streets, and

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“in addition thereto the bringing and carrying to a conclusion of a
 “suit to quiet title against the City and County, which latter pro-
 “ceeding is a formal one that the title company will arrange to carry
 “on itself, and the consumation of our deal need not wait upon that
 “action. The payment of \$65,000 provided for in said option will be
 “made when the title to present city streets is vested in you, and you
 “are prepared to convey title to the property to me or to my nominee,
 “including title to such present streets free and clear of encumbrance.

“Respectfully,

“BRUCE CORNWALL”.

8587 This matter was presented to our board of directors, who said that the deposit of \$10,000 was too small an amount, as it would take at least four months, and likely much longer, to carry through the proceeding of closing the existing streets, and dedicating new ones, and particularly if Mark Daniels, engineer for Mr. Cornwall, should submit plans for the improvement of the property, including the opening of new streets, and that if Mr. Cornwall did not finally conclude the purchase, that the plans submitted by Mark Daniels being once accepted by the supervisors would be final, and these plans might not suit a future purchaser, or they might not be in line with the improvement of the property as contemplated by the company itself. For this reason the offer was declined, and the deal fell through.

I had an offer from Rose Getz, per A. C. Franklin, her son-in-law, for 6.38 acres, at the junction of Sloat Boulevard and Thirty-sixth Avenue. I was simply informed that Mr. Franklin transacted all of the Rose Getz business; I did not see the power of attorney.

8588 (The offer from Rose Getz was introduced and marked “Plaintiff’s Exhibit 167”).

8590 CROSS EXAMINATION BY MR. SEARLS.

8591 This Getz offer was for 6.38 acres. I am only familiar with the location of the property owned by Rose Getz in that vicinity in a very general way. This particular property is bounded on the east by 36th Avenue, on the west by 37th Avenue, on the south by the right of way of the San Francisco Electric Railways, and on the north by the Pueblo line. Thirty-seventh Avenue does not go through. I think it has been cut through to about what is known as X Street at that point. The San Francisco Electric right of way along the north line of Sloat Boulevard is private property, and that shuts off all this property on the north line of the boulevard from access to the public highway, including the property concerned in this offer. If they had acquired this block of land here (indicating on the map), the Getz property would have a frontage on 36th Avenue, but there would be no other advantage in the ownership of that tract, other than if they

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could acquire it at that price it would be a good purchase in my estimation.

Questioned by Mr. Greene.

The streets U, V and W, are not open, except on the map. These streets are not dedicated. North of the Pueblo line these streets that you see indicated on this map do not exist. This map has not been filed; as a matter of fact, we are now working on a proposition of asking the city to close all these streets, and then open new ones on the contour plan.

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CROSS EXAMINATION BY MR. SEARLS.

This property was all west of 35th Avenue, and included the block immediately west of 35th Avenue. That 35th Avenue is dedicated at least as far as the Pueblo line, and it is occupied by a car line from the Pueblo line down to this point. The streets run east and west, and the avenues run the other way. Thirty-fifth Avenue goes through to Sloat Boulevard.

There was submitted with the offer a map which is attached to the original offer, so that they knew what they wanted, and they designated that on the map. The description on the map corresponds with the property that I have just been describing. The offer contains a lot of data as to prices per square foot, which referred to release prices for sales on the general mortgage, and these prices per square foot are, as a rule, considerably higher than the original purchase price of the property as a whole per square foot. They might take the cream of the property, and if the price were not high enough to make the average all right, you would find yourself without any security in the course of time. They were to pay us for the flat surface, and whatever they were to do in the way of streets would be at their own expense.

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The following was simply Rose Getz' offer, to which we did not agree: "It is further understood and agreed that an allowance of '62,510 square feet shall be made to said Rose Getz for public streets 'in said tract, and whenever such streets are plotted by her, and the 'location thereof fixed, said Parkside Realty Co. shall not be entitled 'to any payment whatever therefor, except as the same is covered by 'said annual installment payments; that is to say, such streets may 'be dedicated by her, or her assigns, and when required by her, her 'said trust company shall join with her in making a good and sufficient dedication of said streets." That was one of her conditions to which we did not agree.

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The further condition was "That the foregoing allowance does 'not include 35th Avenue, but that it is one of the conditions of this 'agreement exacted by said Rose Getz, to the end that the property 'sought to be purchased by her shall also front on 35th Avenue; that '35th Avenue, as now located, shall be extended as a public street to

"the northerly line of Sloat Boulevard." It was not a cash proposition but the deferred payments were to carry interest at $5\frac{1}{2}\%$.

8597 The Cornwall offer included these 6.38 acres, and enough adjoining, adjacent and contiguous to it to make up 100 acres altogether. There were 42 acres south of the Pueblo line, and 60 odd acres above the Pueblo line, in the shape of blocks, roughly going as far north as V Street, and between 37th Avenue on the west, and 22nd Avenue if projected to the Sloat Boulevard, on the east, and on the south bounded by the right of way of the San Francisco Electric Railways, and on the north by Vidente Street. I think it was an original venture with Mr. Cornwall. That offer did not include any of the settled part of Parkside; the nearest settlement would be that broken tier of lots running from 33rd to 26th, between U and V Streets. None of that property that Mr. Cornwall made an offer for had been subdivided, and map filed showing such division. The blocks north of the Pueblo line were laid out by the city long before we purchased, and they are in the same condition now.

8598 The letter which Mr. Cornwall wrote me after the first option had elapsed stated that he would make an offer containing substantially the terms of the former option. I will read that to you: "We find it will be necessary, in order to subdivide and sell the Laguna Puerca Tract to have the present streets within the boundaries of the tract closed and abandoned, and deeded by the city, and new streets accepted by the city in lieu thereof. I and my associates are willing to purchase the tract for \$675,000 on substantially the terms agreed upon in our memorandum of option, dated October 24, this year." He says there that he is willing to purchase on substantially the terms of the former option, which was an option which Mr. Cornwall could take up as he saw fit, but with this letter he proposed to tender a check of \$10,000, and then if he did not exercise the option, that was forfeited. The offer was refused by us on the ground that the initial payment was not sufficient, and that the proposed subdivision into streets might not tie in with the Parkside Subdivision.

Witness: DAVID B. FARQUHARSON for Plaintiff.

Farquharson

DIRECT EXAMINATION BY MR. GREENE.

8599 I am 55 years of age, and reside in San Francisco, my business being that of builder and general contractor. I learned the business from boyhood, and I have been in business as a general contractor in town here for about 16 years, doing residence work, office buildings, and so on. We take the entire contract, and do the entire building. The following enumerates some of the building and work done in California. Doctor Tevis's residence, on Taylor Street; Mrs. Watt, Presidio Terrace; Professor Hart, in Berkeley; Professor Gayley, in Berkeley; Mrs. Brewer, in Oakland; Dr. Von Adelung, in Oakland.

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Business buildings: Wiley B. Allen, Kearny St., San Francisco; L. Kreiss Furniture Co., on Sutter St.; Bohemian Club, Post and Taylor Sts.; Spreckels Estate, Market and Fremont Sts.; Bank of Willows, Willows, California; a building for Dr. H. L. Tevis, at Alma, California; a building for Mrs. P. A. Hearst, Pleasanton, California. A residence and all buildings for the late F. W. Sharon, Menlo Park, California; the Y. W. C. A. Building, Webster Ct., Oakland.

On several occasions we have acted in arbitrating disputes between owners and builders, and in appraisements. William F. Wilson & Co., on the Wiltshire Hotel Building; Langley & Bergstrom, Sharon Building; Monson Bros., at Stanford University.

I have been over all of the buildings of the Pleasanton properties of the Spring Valley Water Co., and am more or less familiar with the entire property there. I have been doing work at the Hearst Estate there for 14 or 15 years, so that I am thoroughly familiar with the entire country there, but apart from that, I made an individual inspection of the ranch property, and every individual building on the property. I made an appraisal as of December, 1913, of the cost to reproduce those buildings.

8600

We had a printed form submitted, with a map showing the properties and the different buildings, giving the sizes of them. We checked off all the sizes, and then judged the worth of the buildings, and the cost of reproduction according to the time it was built. In ranch buildings, in some cases you would have a building that was just upright boards nailed on to one or two strips of wood, without foundation or anything. In other cases you had a regular foundation, with a regular frame, covered with rustic, or with rough boards; sometimes there were floors, and sometimes there were not, just a mere shelter shed, so that the size of the building, and the shape of the building, was no indication of the value. You might have a very large barn building that was simply upright boards without foundation, or without floor, or anything, just a few rough boards nailed on without any regular framing underneath the boards; in other cases there were regular wood floors, and in some cases, cement floors, so that the buildings had to be taken each one on its own merits, and entirely apart from the size of the building altogether in order to ascertain an actual value of the buildings. I took them in that way, and appraised them according to the style or form of the building that was on the ground.

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(The Master's attention was here directed to the fact that the average of Mr. Dockweiler's and Mr. Dillman's figures on these buildings is \$169,746, and that Mr. Farquharson's figure is \$169,943).

(Pleasanton ranch houses, comparison of gross reproduction cost estimates, as of December 31, 1913, Spring Valley Water Co., introduced and marked "Plaintiff's Exhibit 168").

I consider the value of the buildings in 1913 as distinguished

8602

from the cost to reproduce them; that is I considered what their actual condition was; in doing that each building had to be taken on its own merit; there was a general depreciation. On some of them we found there was 25%, and on some of them 75%, and the rest were in between, depending upon the kind of building, and the age; in some cases the buildings were in good, useful condition, and in others they were very much dilapidated. The figure that appears in this exhibit is for reproduction new.

8603 Mr. Metcalf: The depreciated value which Mr. Farquharson arrived at was \$132,568, or an average depreciation of 21.3%. Dockweiler's \$69,886, that is 45.9% depreciation. He omits from his valuation the Hop Ranch buildings. Dillman \$85,618, which is 56.9% depreciation.

8605 Witness: F. A. RADLE for Plaintiff.

Radle

RE-DIRECT EXAMINATION BY MR. OLNEY.

In the case of the right of way for the pipe line for the Valley Pipe Line Company, through the San Joaquin Valley, at a price of about 20 cents a lineal rod: That price of 20 cents a lineal rod was the consideration, or the price paid for the acreage we occupied with the pipe, but nothing for the damages. The damages were paid in addition. It does not include damage, severance, or otherwise.

8606 We had to pay severance damages in the way of removing the trees, and trestles across the streams, and the cutting of fences; all such matters are adjusted. Right after the work is done we go over the territory again. After the pipe is laid and covered up, we do not have to go and pay severance damages on top of our original purchase price, but we have to pay damages to crops of an area of 46 rods, owing to the ingress and egress, etc. Referring to Item 29, page 3; the county road going to San Francisco lies on the right hand side of the pipe line right of way. Taking the property on the left hand side of the right of way, it is necessary for people living on that property, or using it in order to get out and go to San Francisco, or go south in the other direction, to cross the right of way; there is no road on the left hand side of the right of way which gives general access to the property on that side. This trestle on this tract would interfere with access to the property on the left hand side of the trestle for some distance.

8607 Referring to Item 30, page 3, on which I have allowed a severance damage of \$1,018 for trestle, that is the portion of the right of way which is covered by a trestle, and lies immediately north, or towards San Francisco from the dividing line between the land of Patrick M. Partridge and the California Gas & Electric Co. The effect of that trestle is to cause you to go around it.

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Questioned by Mr. Searls.

The land to the right of the right of way, as you go toward San Francisco, is a low land, marshy in a degree, but it could easily be reclaimed for business purposes. The particular two acres, in every instance that I visited it, seemed to be absolutely lying dry; that is, not submerged with water, and so far as I can see, there was no reason why it could not be used in its present condition, but to make it a business property, it would have to be reclaimed and raised. Even if it were filled in, it would not be possible to cross over the top of the trestle and get in from one part to the other, unless you raised it considerably above the abutting property. I did not measure the height of the trestle, but I would say even after it was reclaimed it would probably be two feet, or such a matter, above; at the present time the parties using that property have to go around, and have no road, and in the matter of egress and ingress, they drive in over the spur track, and they claim debarment on account of the trestle.

8608

The portion of the Holy Cross Cemetery through which the right of way runs has not been improved; as to whether it is plotted or not, the superintendent claimed that it was of the value, I believe, of \$10 a burial lot upon a 99-year lease, certain sizes. I don't know whether it had been plotted or not. In regard to the other cemeteries, they are debarred from planting because of the fee ownership. In the case of the other cemeteries, the cemetery comes up on each side to the right of way. Mt. Olivet has been improved and plotted I think the entire distance. In Cypress Lawn, and some on that side, there are a few places where they have not developed and improved the lots, or they are not occupied; they are up to within a small distance, but are gradually coming closer to that line. Looking at the pipe line right of way across these cemeteries, the improved portion of the cemeteries comes right up to the right of way in some places. I should estimate outside of Mt. Olivet, probably 70% is developed up close.

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Witness: CHAS. S. McDONALD for Defendants.

DIRECT EXAMINATION BY MR. SEARLS.

McDonald

For the past two years I have been with the City Attorney's office in San Francisco, as an appraiser of real estate. Prior to that time, for several years, I was a right of way agent and real estate appraiser. I have been engaged in this business at intervals for the last 14 years. In 1902 and 1903 I was with the Santa Fe Railroad in charge of the construction of the extension from Richmond to Oakland, and during that service I was more or less active in the acquisition of rights of way. In 1905 I entered the service of the Western Pacific Railroad, and was right of way agent exclusively for a period of 18 months. After that I was super-

intendent of construction, and more or less right of way matters came up all the time during my service with them. After that I was employed for two years by the Oakland, Antioch & Eastern Railroad as right of way agent.

8611 I bought about 40 miles of right of way for the Western Pacific Railroad, and in that 40 miles was included a right of way and terminal grounds in Stockton, and I expended about \$250,000 for rights of way with that company. I bought 64 miles for the Oakland, Antioch & Eastern in Contra Costa, Solano, and Saramento Counties, at an expenditure of about \$60,000. I was in the service of the Southern Pacific Co. for about a year, gathering data for the appraisal of their terminals and rights of way through cities and towns in California, for the purpose of making an appraisal for the Interstate Commerce Commission, and the State Railroad Commission. I worked from Reno, Nevada, westerly through the mountains, and down the Sacramento and San Joaquin Valleys as far south as Los Angeles; my work included Los Angeles, San Pedro and Wilmington, and some of the adjacent towns, and I took all of the branch lines in the San Joaquin Valley, and the oil fields, and further north.

My purchases of rights of way for the Western Pacific involved the acquisition of rights of way through the Livermore Valley, Pleasanton district, and Niles Canyon, but not so much in Niles Canyon. The only right of way I acquired there was between Sunol and Pleasanton, a little above the canyon.

8612 In my opinion there are elements involved in the acquisition of a railroad right of way which would naturally make it more expensive than a right of way for any other purpose. The use of land by a railroad practically precludes its use for any other purpose; the question of severance damage is always a rather serious question; there is also the element of the continual danger of crossing the tracks by the owner of the land through which the right of way passes; inconvenience in the operation of his land.

8613 I have never acquired any pipe line right of way. I am familiar with the rights of way owned by the Spring Valley Water Co. through going over them on foot, and examining them through each particular tract through which they pass. I am generally familiar with the value of the lands through which these rights of way pass; early in 1914 I was employed on behalf of the City Attorney's office, in San Francisco, to gather data and make an appraisal of the lands of the Spring Valley Water Co. in Alameda County. My first work in that connection was to go through the records of Alameda County and ascertain the neighboring sales, and get all the information that I could on the subject of neighboring sales. Later, in conjunction with Mr. Callaghan and Mr. Parsons I made an appraisal of the Spring Valley lands in that county. After this was completed Mr. Steinhart requested me to follow the same procedure in San Mateo

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County, and I went through the records in that county, and ascertained neighboring sales, and followed the matter up, but I did not make an appraisal of the Spring Valley lands. Subsequent to these investigations, I made, at your request, an appraisal of the pipe line rights of way of the Spring Valley Water Co., and also of the telephone and power line rights of way which are enumerated in the inventory.

(Rights of way, Chas. S. McDonald, introduced and marked "Defendants' Exhibit 169".)

Referring to the column headed "Parcel Nos."; those numbers refer to the parcels shown on the Spring Valley maps in Exhibit 8, and the 4th column gives the length and width of the right of way. Where I have given the figures for width, they either mean that the width has been taken from the instrument conveying the title to the Spring Valley Water Co., or that the right of way passes through Spring Valley lands owned in fee. Where the figures are not given for the width, I have taken what might be termed typical widths. I have found that in a good many cases where the width was mentioned through farming land for instance, 20 feet was the width mentioned, and I have adopted that in a good many cases; in cases where the width was designated through adjacent lands, I have taken that width if the conditions were the same. In other words, where I found that the company had originally acquired a pipe line right of way 10 feet in width for a given distance, and that the instruments conveying the right of way for a continuation of that line did not specify any width, I assumed 10 feet, and if the original instrument shows 20 feet, I assumed 20 feet.

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I have taken into consideration the width that was necessary in order to give the company room to place the dirt during the excavation of the pipe line in my placing of the prices on the right of way. I did not consider that because the company would require a little more space at the time the pipe line was constructed that they would have to buy a perpetual easement for that amount, but I took that into consideration in fixing my price.

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Referring to column 5, which deals with right of way formerly private property, now public road; I valued that at original cost where such cost could be obtained, and if I could find no indication that the company had never paid anything for it, I did not allow anything. The next column contains the length of right of way in public road, to which I have given no value, and that refers to right of way which is all in the public road. The next column shows the acreage which is obtained by computation, multiplying the length by the width, and reducing it to acreage.

In the next column, headed "Value per acre of abutting property", I have approximated what might be termed the asking value of the land. I obtained this by inquiry among the property owners,

and other people who would know of the value of land in each vicinity. In addition I have my own knowledge of the sales, but these prices of property are somewhat larger than the sales would indicate. In my experience as a right of way man I always found it necessary to assume a rather larger price than the real market value of the land. The next column shows the value which I have placed on the right of way in each item, and in placing those figures I had in mind the value of the adjacent property, the damages from severance or any other case, the character of the title, any conditions in the deed that might affect the value, and the acreage of the right of way, and these figures represent my best judgment as to the value of the right of way.

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The next column, headed "Original cost": These original costs were compiled in the office of the City Attorney of San Francisco from the Spring Valley records, and I obtained them from the City Attorney's office.

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The information in the column entitled "Character of title" I obtained from the instruments conveying title. There were copies of them filed in the office of the City Engineer of San Francisco, which were obtained in 1914 for use in the condemnation suit.

The final column of "Remarks" includes extracts, conditions in the transfers of title to the Spring Valley, and some other comments.

Referring to page 1; in my judgment there would be no damage with respect to trees in the case of this item on page 1. The pipe could have been laid through the trees without touching any of them. I have no knowledge of value of the trees, but \$50 per tree for ordinary pine trees looks pretty high to me. The trees on Parcel 877, with the exception of the trees in the rear of the Howard residence, I consider pretty scrubby; they are pretty old oak trees and covered with moss, but in the rear of the Howard residence there are some very fine pine and eucalyptus.

8619

If found in the case of item 29, page 3, that the pipe was carried on a box trestle across the property, but on the property line; to the west the property was owned by the power company. I did not make any allowance for severance in that case, because there was no severance damage in my judgment. In the case of item No. 30, I practically agreed with Mr. Radle, although the severance damage there, in my judgment, was not very important, because the pipe was carried on a very low trestle, and the top of the boxing was only on the level of the embankment for the spur track into the property. I think that if this property were filled in and used for industrial purposes, for which it is best adapted, and that boxing was taken off the pipe, there would be no severance there.

Questioned by Mr. Olney.

I have allowed severance damages on item 30, and my acreage there is 1.221 acres, and I allow a value per acre of \$2,000. The value

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I get for my right of way is the multiple of the acreage by my value per acre for abutting property, and that is my method of getting at that sort of thing; I never in my experience have had to separate the severance from the value of the property. The value of the abutting property is \$2,000, if you take into consideration the damage to the property from severance. I included my severance in the value of the land. I did not find very much damage done by the right of way, but where I did, I valued the abutting property, not the right of way itself, upon the basis of including in that value the amount of damage which is done by the right of way itself. The abutting property here is a very poor type of marsh land, and \$1,100 is the real selling value, I think, of that property. I do not think there is any asking value for that property, but property adjacent to it, I understand, they are asking about \$1250 an acre for it; that is in the Partridge lands.

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DIRECT EXAMINATION BY MR. SEARLS.

When I came to the question of value through cemeteries, I found it rather a difficult one. In my railroad experience, I always understood that it was not possible to acquire a right of way through a cemetery by condemnation proceedings, and I requested Mr. Searls in this case to advise me whether or not the company would have the right to exercise eminent domain, and he advised that they would not have that right, so the question resolved itself in my mind as to whether or not the Spring Valley Water Co. could acquire a right of way at a reasonable price, and as a starter I took the value of the land as not impressed with cemetery use, and computed the right of way through a width of 20 feet, and as a margin of safety, I doubled that width and price; this was my tentative figure. I found by inspection on the ground that it would be possible to run the line around the cemetery. I made practically a survey of the line. I found the difference in length of such a line from the existing line, and I requested Mr. Ellis to compute that on the basis of the figures that have been introduced in this testimony as to the cost per lineal foot of pipe laid, and he did so, and gave me the figures, and I found that the price that I had arrived at was in excess of that figure, and I concluded that I had been liberal enough in the matter, and that was the price that I put as the value of the right of way through the cemetery.

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In Cypress Lawn I found, in considering the question of right of way, that the Spring Valley Water Co. had, in 1907 and 1908, acquired a right of way through the cemeteries at a figure very much below the burial lot value of the land, and this entered into my judgment of the question. I took a figure that was compiled in the City Attorney's office, and my recollection is that it agreed with the figure that was introduced in the testimony.

8623

Referring to the Abbey Homestead, and the other subdivision blocks in and near the City of San Francisco, I have not allowed anything for the value of the pipe laid down in the streets. I assume
8624 a lot value in all those cases where I found subdivisions.

Referring to page 10, serial No. 47; I have not allowed anything for damage where the pipe line right of way goes under houses. I was advised by Mr. Searls that this was in the same category as pavement over mains, and to disregard it in making my valuation, and I was governed by such instructions. I assumed in every case that the pipe had been laid first, and the house built afterwards. I did not find any information in the Spring Valley records that I consulted, or from conversation with anybody during the investigation, that any house had been moved in order to permit of laying pipes.

8625 Mr. Searls: In this case we assume that all of the houses were built after the pipe was installed. We were unable to find any indication that the pipe had been laid under houses already constructed; if such is the case, an adjustment should be made.

Questioned by Master.

Mr. McDonald: Villa Avenue goes through Mt. Olivet Cemetery, and I have given it a valuation where it went through the cemetery, which is the portion shown on Map 33, but where it went through the subdivision where there is a street marked Villa Avenue, which is an existing street, I have not given it a valuation. That right of way was not acquired through there before that street was
8626 laid out. The map of Abbey Homestead was filed before any right was acquired, according to the instruments I have been able to get hold of, and I base that on the fact that the Abbey Homestead Co. gave the Spring Valley Water Co. the right to lay their pipe through Villa Avenue under certain conditions.

Mr. Radle: From the information we gathered, that was private property, now a public road. We got it from what records we could find in the company's office, and information we got locally.

8627 Mr. McDonald: The map was filed in 1872.

Referring to page 13, the first four items; I did not consider that there was any damage to the lumber yards, as the lumber yard people are occupying the space with their lumber and with their runways. In arriving at my figure, I had in mind the fact that their business would be temporarily interfered with at those points during the time at which the pipe was being laid.

Item 85, on the same page; the pipe line does not run under the hotel at that point. It runs in front of it, under the sidewalk, or the platform in front of the hotel between the sidewalk and the hotel. The pipe is visible just beyond it, and the owner of the building told me exactly where it was. He did not tell me that the hotel had been
8628 moved back on account of the pipe line. He told me that when he bought the lot he did not know the pipe line was there, and he had

his plans prepared for the building of the hotel, and after they were prepared he found that the pipe line was there, and he had to have his plans changed.

Mr. Radle: The man made the remark to me that the hotel had been moved back once on account of the pipe, and he considered it at least a damage of \$1,000 in the value of his property.

Mr. McDonald: I allowed nothing as a value of the right of way through there. There are several cases of that kind along there, and when I came to consider the right of way along that block, and also certain other blocks there, I found that the pipe line was either on the property line, or just inside of it, and in trying to account for why the pipe was located in such a position, I came to the conclusion that that had occurred by reason of the fact that the roadway at the time that pipe line was laid was not well defined, and that they had gotten off the road or off the street, and no sane construction man would endeavor to lay a pipe line as of 1913 on a property line, or just inside of it, when there was a street open for the line parallel and adjacent to it, and the moving of the pipe just a few feet over would enable them to lay it without purchasing any right of way. I deviated in this case, and one or two others there from an exact reproduction value by reason of that fact. In the case of Balboa Park I was informed by Mr. Searis that whether or not the Spring Valley would have the right to lay a pipe, or could acquire a right of way, was entirely within the jurisdiction of the Park Board, and they had no authority to sell a right of way, and that in 1915 the Park Commissioners had granted the Spring Valley Water Co. a right to lay a pipe across Golden Gate Park without any compensation, so I thought it a matter of equity here that no allowance should be made in this case; the street was there, and the pipe could have been shifted a few feet and laid in the street.

8629

Balboa Park is not on the same side of the street as these other properties for which I have allowed no value. The hotel is on one side of the street, and several blocks south from Balboa Park, and then pipe gradually cuts across the street and gets into Balboa Park, and follows the property line for about two blocks. Then it gets out into San Jose Avenue again; I suppose they followed San Jose Avenue as it existed at that time; they have straightened it since somewhat, and when they straightened the street the pipe line was out of it. I have treated items 83, 85, 87 and 90, on page 13 of my exhibit in just that fashion, the conditions were the same. The first case is the United Railroads property, the pipe line is on the property line. When you get into the next block where the hotel is, then the pipe gets out into the street, and it gradually crosses the street until it gets down to Balboa Park, and then it is on the property line again, and it is on the property line for two blocks of Bell Roche City.

8630

Wherever a part of the right of way runs across city lands upon which Mr. Baldwin and Mr. Paschel agreed on the valuation of, I have included that valuation in my exhibit.

8631 In the Niles Canyon wherever the tunnels are on land's owned in fee by the Spring Valley Water Co., I appraised them at the fee value of the lands as I found them. I have taken a certain width as a right of way, but I considered it as a fee, although the tunnel is underground, and does not interfere with the use of the land, where the title was in fee, and we would naturally expect to acquire a fee title, I have taken that as the value of the right of way for tunnels, and I followed that practice right down through the Niles Canyon, but when I got into the Lake Honda tunnel, I found that the tunnel in 1913 passed under a couple of subdivisions and some undivided property. That is on page 33 of my exhibit, item No. 78. I just took an arbitrary figure there. I had before me there the experience of the City of San Francisco in acquiring tunnel rights of way for the Twin Peaks Tunnel under lots that really were not benefited in any way by the tunnel, and where the City had only to pay a nominal price of \$1 a lot; in no case did the price exceed over \$50. That applied where there was at least from 25 to 50 feet over the roof of the tunnel. I considered also in connection with that that the Twin Peaks Tunnel is a pretty big hole, and there would be a lot of noise thereafter, but in the case of the Spring Valley Water Co.'s tunnel, it is a pretty small tunnel, and in my judgment, the figure I have placed on it would be ample to reproduce the right that the company owned at that time. I allowed less than 20 cents a foot, it is about 2800 feet.

8632 Where a part of the pipe line is on trestles, in handling the element of damages, I considered the value of the lands through which it passed, and its position with reference to the balance of the land, and based my price on my best judgment, having those factors in consideration. In buying railroad rights of way, I never found it necessary to figure one value for the land and one for the damage.

Taking the Ravenswood-Belmont right of way, it practically parallels the state highway, and other roads, from the point where the pipe line makes the turn after it comes across the bay, although it is probably 400 or 500 feet most of the distance from the road, and in some places probably a little more than that; on the 25 feet from Niles to Centerville, about the same conditions prevail. The Niles-Centerville road parallels this right of way, but it is 400 or 500 feet away from it.

8633 Questioned by Mr. Olney.

I think the right to put its telephone line on the county road is a right that the company could easily acquire, and probably without any expense; in the case of the 25-foot strip from Niles to Centerville, I think that parallels, and is adjacent to the Southern Pacific

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Company's line there, and my experience is and has been that it is a pretty easy matter to get a telephone right of way. I do not believe that the right of condemnation would exist along the Southern Pacific right of way, I am simply assuming that it could be obtained. I don't know whether it could or not. I think also it is a fair assumption that the Spring Valley Water Co. would have the right to put in its telephone line on the county road, or else could obtain that right from the Board of Supervisors.

DIRECT EXAMINATION BY MR. SEARLS.

I valued this particular pipe line in that situation as a pipe line right of way. We made some shifts on the line of the Western Pacific about three-quarters of a mile north of the north city limits of the City of Stockton on account of its Catholic Cemetery. I have always understood, as a railroad man, that a railroad company would rather than to attempt to cut through a cemetery make a detour, or take a very much less desirable line on that account.

8634

CROSS EXAMINATION BY MR. OLNEY.

There is no detour on the Western Pacific north of Stockton on account of that cemetery, but the line was shifted somewhat on that account, although the shifting did not amount to much.

The land included in item 1 on page 1 of my exhibit is rough canyon land; this right of way is mostly on sidehill. The character of the land included in item 2 on the same page is practically the same, but I think unquestionably item 2 is more valuable. I should think it is more valuable in the proportion of 3 to 5. The abutting land—item 1—is worth about \$150 or \$200 an acre. I put \$300 an acre on it because there was a case where the pipe line was on trestles for a distance, but it was not a separate damage in my mind. In the column headed "Value per acre of abutting property", the damage and the value of the abutting property is handled as a value per acre. The damage that was done is purely a matter of judgment in this particular case; I could not separate them for you. The \$300 was just my idea of what we would have to pay for a right of way under the conditions as we found them there, taking everything into consideration.

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In purchasing a right of way for a railroad I never had to compute separately the damages and value per acre of the land. Where a railroad right of way runs across a piece of property and cuts it, in figuring with the owner I do not ordinarily endeavor to arrive at some value for the land itself that is taken, and then some estimate for the amount of damage that will be done to the balance of the land. I have found that usually the owner names a price for the right of way, taking everything into consideration; that has been my experience. That price usually is pretty high, but that is a question of bargaining with him.

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8637 I do not remember any instance where I reported that it was not possible to deal with a man on a reasonable basis, and that a reasonable figure to pay him was so much for his land, and so much for the damage to the balance of the land. I do not recall any instance where I could say that the damage was so much, and the right of way was so much.

8638 Referring to item 12, page 1; the right of way at that point passes through a corner of a lot, and I consider the figure of \$500 in my allowance was ample to cover that. There was a case where it was in the street, and reproducing it as of 1913, the right of way would not cost anything. I consider, probably you would have to pay whoever owns that property now \$500 to get through it, and if that would not take you through it, you could go around it for less than that. This runs pretty close to the street corner of Mr. Tubbs' property, which is very well improved property. I think you could get through there with a 30-inch pipe line for \$500, as there are no improvements of any value in that portion of his lot, excepting a lawn. I did not see any trees or shrubbery that would be destroyed in that property, and it would only be a matter of tearing up his yard for a day or two. In getting through a place of that kind the method of procedure in my judgment would be that the people who are putting in the pipe line would take up that sod and lay it to one side, put their pipe line in, throw the dirt back into the hole, tamp it in, and put the sod back, and I consider that that amount of \$500 is ample to cover that. Assuming that it took a week to put the pipe line through, my idea in the matter would not change. I allowed there the original cost, which I consider would cover everything through what was the private right of way at one time; it is just an under-surface easement, no width specified, no surface rights. 8639 The \$500 which I put on I allow as the price you would have to pay to get through the Tubbs property and the balance of that tract, Parcel 876. I assume that it would be possible to lay it in the county road there if they were held up in getting through that property. As far as items 10 and 11 are concerned, they would have the right to lay it in the road where it is now, but I do not think it is paramount to the dedication of that street as a street, but otherwise I did not put any value whatever on the private road which they had there. Apparently the owner of that property had the right to put that street there. Otherwise, it would not have been there, so that right would be paramount in my judgment. It is a case where they had the right to lay the pipe there before the road was dedicated by the owner, but they also were required to put it under ground and restore the surface so that the owner could use the property. That was a condition in the deed.

8640 Item 15, page 2; the land there is rather gradually sloping side-hill land, pasture. Item 16 was rough sidehill land. Item 17 was hill

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land, rough pasture land, and Item 19 was hill land also. I valued all of this land at \$400 an acre as being about the same character and class. I did not consider that the steep sidehill land there, where that box pipe and trestle is, is worth quite as much, but I consider that if a person went in there today to acquire that right of way, it would all be classed at the same price. I think they would practically have to pay as much for one as they would for the other.

In considering the value of \$400 an acre, I would consider if there were any damage at all—item 16—which I do not believe there is, and it certainly would be covered by that price; that box pipe and trestle is on the edge of a big slide; the portion of the land that lies between that and the county road is hardly worth a dollar an acre. It is very steep and unstable, and the box pipe and trestle certainly do not interfere with access to the balance of the property, so in my judgment there was no damage, but as a matter of being fair to the company I considered that land just as good as the balance of it, \$400 an acre.

Parcel 878, item 15, is not steep sidehill. Parcel 880, item 17, is very rough hill land, all of it, but it does not happen that the pipe line is laid there on the sidehill; it is over a kind of a saddle.

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Item 29, page 3; the trestle there is on the Partridge property. Assuming that at the time this right of way was purchased the land on each side was held in the same ownership, I think technically there would have been some damage due to the existence of the trestle, but practically I think not, as far as the use of the property is concerned, or its sale value. I guess that property is valuable to hold. I do not see anything else for it; it is marsh land; I suppose it has an industrial value. It is not very much in demand as far as I can find out. The value which it has is an ultimate value for city purposes from an industrial standpoint; not from any other standpoint, and I suppose anything that is above the surface of the ground would be in the way in a measure when that property comes to be divided. That right of way is 385 feet long, and I think you could get a right of way for that length of trestle for \$254 as the conditions existed there. I think I could purchase that kind of a right of way, merely an easement, for that amount of money. The distinction between purchasing a fee and an easement is pretty hard to explain, but as I found the conditions there, the pipe was pretty close to the surface of the ground. It is a trestle, but it is a low one. If you were to remove the boxing of that pipe, and that ground were filled up, and in the process of filling the Spring Valley Co. were required to remove the boxing from the pipe, I do not think the pipe would be above any surface of ground that would be built there for industrial purposes. It would be close to the surface, and would probably be too close to make it safe to lay the pipe under the ground.

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At that point the main county road is to the east or righthand side of the right of way going towards San Francisco, but it is not necessary, in order to get to or from the property on the west, or left hand side of the right of way, to pass over the pipe line. I would get out on the ground that is high enough to get out on. You have to pass over the pipe line in order to get from the property. You would have to go around that restle unless you built a road across the marsh land to get out; if you had that, you would go over the pipe just the same as you would go any place, but you would not have to make much of a fill to get over it. In making such a road you would have to allow for a drain; you would build a little bridge over it. I did not make any allowance for anything of that sort, because the property to the west did not belong to the party from whom this right of way would have been bought, otherwise I would have made an allowance. I don't think that was a condition that existed at the time the right of way was purchased, but it was a condition I found there as of 1913. Partridge was the original owner of the property that is now owned by the San Francisco & Sierra Power Co. I don't know whether Partridge sold this portion of it in 1909 or not.

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Referring to item 36, on page 3, on this item I have not specified any width for my right of way. None was specified in the deed. I computed on a width of 14 feet. I am not a pipe line contractor, and I just took the facts as I found them. I found in this particular case that the company owned 14 feet on the adjoining property. The pipe was there and had been put in, and had been maintained on that 14 feet, and according to my way of thinking, on the next property where the conditions are exactly the same, 14 feet ought to be sufficient, and I have computed it on that basis.

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In putting these prices on, I considered that probably the Spring Valley Water Co., in laying its pipe, would temporarily for a few days have to occupy a little more ground than 10 feet, and I have taken that into consideration in placing these prices on the right of way. It is not anything that I could separate in my mind as to what that right would be worth, but I considered it. I had in mind that while more space than 10 feet might be required at the outset for the installation of the pipe, that space would only be temporarily required, and accordingly I made some slight allowance in price for the temporary situation, but I did not consider it as requiring permanently any larger right of way than 10 feet. I had in consideration the necessity of going in and repairing the pipe from time to time, and possibly putting in other sections of pipe. I have considered this, that admittedly in a great many cases here the Spring Valley only had certain widths of right of way, either 10 feet or 14 feet, or 20 feet, and the pipe is there; it has been there 30 or 40 years; it has been put in and has been maintained all that time. I

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

assumed when I found no specified width of right of way, a width of right of way which corresponded to a right of way in the immediate vicinity where the width was specified, and I took them to be about one and the same thing, unless there were other conditions that modified my opinion. I assumed that for the purpose of computation only. I suppose the legal right of the company would be about 30 inches and 44 inches, about 2 feet under ground.

I want to state, with reference to my figure on page 5, of \$884, I allowed that merely because the original cost of the right of way through that tract amounted to \$1200; the \$1200 covers the balance of the tract. This item of \$116, \$200, and \$884, equals \$1200, and I divided it in that way. That does not represent my judgment as to the value of that right, but it does represent my judgment as to the equity of it, the allowance of \$1200, because it was paid originally.

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This value of abutting property was not given very much consideration by me. I have put it in there more as a matter of agreement with Mr. Radle as to the value of the adjoining properties, but that did not represent the value of that right in my mind, and I assumed a value of \$1 per lineal foot. This was a case where I was only considering a right of way—item 5—in the case of item No. 33, I was considering a right of way 1,486 feet long by 25 feet wide, through property that has been valued in the testimony elsewhere, and it was partly owned by the Spring Valley Water Co.; that represents my idea of the value of the right of way; the total value of the tract would be \$8,847. The original cost that I have there refers to the cost of the entire 8.847 acres.

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In regard to this parcel, 127, the trestle in that case runs through the property parallel with the county road, and I think probably it was about 50 feet back from the county road. The portion of the property that lies between the trestle and the county road would not be of any use. The balance is quite useful. There is merely a trestle across it. The trestle in question would be between the balance of the property and the only road by which there is access to the property, excepting that you would have access at one end only. It is my judgment that under those circumstances, and the fact that 50 feet or more in depth along the entire front of the lot are practically destroyed, and that the rest of the property is cut off from access to the county road, that it would be possible to purchase a right of way for a trestle such as the one that there now exists for \$1,486. I do not think that the property that lies between the trestle and the county road is absolutely worthless. It would be quite useful I think for market garden purposes—not useful for building lots. As a matter of fact, the whole tract is not adapted for much of anything. It is marsh land, and is covered with water whenever there is any water in the country.

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- 8652 In valuing the right of way through the cemeteries, I valued as nearly as I could the property as if the cemeteries were not there. In other words, I put a valuation on which property outside the cemetery in the immediate vicinity had, I computed it on a 20-foot width, and then for a margin of safety, I doubled that as a matter of fairness. As a rough check on that, I had the cost of building the line around the cemetery computed, and found that I was quite liberal in my estimate of the values. Just immediately east of Holy Cross Cemetery is San Bruno Road; in my judgment, and considering the topography of the country out there as it exists today, if the line had been rebuilt as of 1913, it would have been carried over to San Bruno road, and down the road. While I computed the value of the right of way through the cemetery as to what I thought should be a reasonable price for it, as a check on that I figured the cost of carrying the line around the cemetery partly through a private
- 8653 right of way, and partly through public streets. My recollection is that there was a margin of something like \$500. The entire right of way through the Holy Cross Cemetery is valued at \$3,440, and I am taking the difference between the line going through the cemetery and a detour around, and it amounts to about \$3,000 to carry it further distance, which includes a private right of way which would be very short, because they would soon get into the San Bruno road. The right of way would be the difference in length across the private right of way now and shifting the line across the highway to get into the San Bruno Road. I think all of 90% of the distance around would be in public road. I have gotten at the matter on reproduction
- 8654 basis, but I just used this other figure as a check to see whether my price through the cemetery was a fair one.

I was advised by the City Attorney that no right of condemnation existed to the Spring Valley Water Co. over this property dedicated for cemetery purposes, but I have put a figure on it certainly. I have doubled my figure there as a margin; I doubled the figure that I arrived at as the value of the land not impressed with a cemetery use. Assuming that the cemetery corporation was willing to sell its property for pipe line purposes, I certainly think that the figure of \$1500 an acre which I have put on this property is the figure they would reasonably ask if the right that you are going to obtain there is the same as the right that you have at the present time. That price would compensate them, provided the cemetery authorities were willing to sell.

- 8655 These lots are worth, assuming that they are dedicated to cemetery purposes, about 41 cents a square foot. They can go out and buy plenty of additional land if they require it, for less than \$1500 an acre, and they are buying it as a matter of fact. These particular lots through which this pipe line goes are worth about \$10 a grave of 24 square feet. I valued the right of way through there at \$1500 an acre

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simply because I would not think that the Spring Valley Water Co. would be justified in paying 41 cents a square foot for a right of way. I don't think they would do it. I have not departed, in this particular instance, from the actual reproduction cost of that right of way. I have computed what in my judgment that right of way would cost through there, assuming that the cemetery authorities are willing to sell that right of way. If they were not willing to sell, I assume you could not go through there at any price. If they were willing to sell, they certainly would not expect to get cemetery prices for a right of way of that sort.

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I think they would sell at acreage prices at \$1500 an acre if they were willing to sell, but I have practically assumed \$3,000 an acre here as the value of the land. I computed it at \$1500 an acre, and that did not measure up to my judgment of the value of the right of way, and to the cost of running a line around it, or building the line outside of the cemetery. I decided that \$3,000 was all right when I had the figures that it would cost to produce the line around the cemetery. I think that right of way through there cost about \$285.

The property through the Abbey Homestead I have valued in general at \$1500 an acre, excepting in the case of the lots that are owned in fee by the company. I assessed them at their lot value, and without any reference to their acreage value. Referring to Block 177, Lot 5, which I have appraised at \$250, when on the acreage price it would be \$343. I can only explain that because I have my acreage price too high, I have been too liberal with you. Certainly the lots are not worth any more than \$250. The cemeteries have put a maximum price that they are willing to pay for these lots in this tract at \$100, and they have purchased a good many of them at that price. I find that that is the case with the Mt. Olivet Cemetery, but I don't think the Holy Cross Cemetery has bought any. In putting a figure here at least three times that on the acreage value, I think I was feeling pretty liberal. I would not change my figures, as I thought the figures were right although I was liberal.

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I think I am too liberal there in the matter of \$1500 an acre for the land, according to the information that I had, but I have no disposition to change my figures and reduce that price at all, although I do not think I would be doing any injustice to the Spring Valley Water Co. if I did that.

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My figure of \$75 on Lot 32, Block 2, of the Abbey Homestead, Item 39, page 10, was just an arbitrary figure. That was a case, as far as I could find out, where the Spring Valley Water Co. did not have any more title than a prescriptive one; they never even had permission to lay the pipe across that lot. I had been looking over that lot, and from the position of the pipe line afterwards, I considered that if I were figuring with the owner of that lot, I could procure that

right of way for \$75. Such a right as exists there, the right to lay the pipe, and to maintain it, and to restore the surface.

8659 For all practical purposes I don't think there would be much difference in the value between the right which accrued from prescription, and a right which is included in an easement, the width in both cases being 25 feet. From what I am able to learn about the matter, the State Railroad Commission, in the case of a mere easement, does not allow anything but the original cost to the company. I was not governed by that in making this appraisalment. I just know that as a matter of information. I don't know that I was governed by anything particularly here. I went out and looked at the lot, and saw the position of the pipe in it, and knew the value of lots in that section. My judgment was that \$75 for the right to put a pipe across there and maintain it was an ample price.

I don't make any distinction in any of my valuations between an instance where the company had a prescriptive right, and no record title, and where it had a record title to a certain easement, assuming that the width is the same in each instance.

8660 Referring to Item 42, page 10; I figured that right of way on a 10-foot width, and I gave the lots a value of \$550. That is 25 by 100. I got my figure in that case by simply taking the number of square feet there were in a strip 233 feet long, and 10 feet wide, and applying my lot value to that amount.

ONE HUNDRED AND NINETEENTH HEARING.
MARCH 20, 1916.

Witnesses: CHAS. S. McDONALD for Defendants.
COTESWORTH B. HEAD for Plaintiff.
LEONARD METCALF for Plaintiff.

8661 (Counsel for Plaintiff advised that it had been agreed between the Counsel for Defendants and Counsel for Plaintiff that in any given rating year which is to be considered, any structures which may have been installed between the first of July and December 31st of that year, shall be taken into the rating base, and if any structures that were installed subsequent to December 31st of such year shall be excluded and brought in the year which follows).

8662 (Certain corrections noted in the transcript).

Witness: CHAS. S. McDONALD for Defendants.

CROSS EXAMINATION BY MR. OLNEY.

Referring to a portion of my testimony which appears on page 8660 of the record, as follows:

"Mr. Olney: Q. Now, Mr. McDonald, pass to Item 42 on page "10; you have there a right of way 233 feet long, across Block 22, in "Union Park: How wide did you figure that right of way to be? 8663
"A. I computed it on a 10-foot width. Q. And what value did you "give to the lots? A. \$550; that is 25 by 100.

"Q. And is that the going value of lots out there? A. It was "at that time.

"Q. \$550 for a lot 10 by 25? A. 25 by 100.

"Q. How did you get at your figure in the case? Did you simply "take the number of square feet there were in a strip 233 feet long "and 10 feet wide, and apply your lot value to that amount?

"A. Yes."

Wherever a pipe line right of way runs through property subdivided into lots, I pursue the same method that I have testified to here in this particular case, and in general I have assumed a 10-foot width for the easement. In this particular Item 42, page 10, I believe the lots crossed had a value of \$550 for a lot 25 by 100 feet. The price that I allowed for the right of way was one-tenth the value of the lot.

If the pipe line crosses the lot at right angles with the length of the lot at some 20 or 30 feet back from the front line, just where a building would be if one were erected there, I still think that you could purchase the easement across the lot for \$55, although the pipe itself would run right through the portion of the lot where it would be necessary to put a building if the lot is to be utilized. I am estimating that there was no building there at the time the pipe line was put through. 8664

If the pipe line enters one side of the lot near one end, and runs diagonally across it, so that you have the pipe line making a diagonal from one end of the lot to the other, I believe you could purchase the right of way for the amount I have mentioned, getting such rights as you have there now. The right that you have there now is to maintain that pipe under the surface, and leave the surface in such shape that it shall not interfere with its use by the owners of the property. I do not think you would have to move the pipe line if a man wanted to put down a cellar, I think you would probably have to make some arrangements with him. With the type of property out there I found very few cellars, and I was governed in that value out there by the fact that the lots with the pipe line through them did sell for exactly the same price as the adjoining lots that had no pipe line in them, which is an indication in my mind that the pipe line through the lot did not affect its value. I made inquiry to ascertain the fact in connection with sales of lots through which this pipe line ran, and I found quite a number of instances, although the people who bought the lot did not seem to be aware of the fact that the pipe line was there at the time they bought them. I found some cases where they knew that 8665

8666 the pipe line was there. In those cases I did not find any instance where, when the purchaser knew at the time he was purchasing, that there was a pipe line running through his property, and he was buying subject to that right, that there was a corresponding reduction made in the purchase price. One woman told me that she knew that the pipe line was under her house, and she was assured that at any time there should be any damage sustained by breaks or anything of that sort that the Spring Valley Water Co. would make it good, and she bought the property knowing those facts, and under such an arrangement. She did not tell me what she paid for her land.

8667 I don't know of any instance wherein a person purchasing the lot, and knowing that the pipe line was there, had any reduction made in the purchase price. I think that the lots were purchased in most cases without the owner knowing that the pipe line was there when purchasing. The figures which I have placed on this property are my judgment. In the case of the Union Park I had a conversation with the owner of that tract, and asked him if in his judgment it would be possible, or if he would have been willing to have granted the Spring Valley Water Co. such a right as they had across the property in 1913, and he said that from the experience he had in handling the property that he did not see that it made any difference, and that he would have been willing to have granted such a right. I would assume that people when they buy lots looked into the title of their property, and there is a record of this particular easement in the case of Union Park.

8668 I think in some cases that where a 30 or a 36-inch main ran diagonally across a lot for a greater portion of its length that it would be necessary to practically buy that lot in order to get the right to cross it in that fashion, but I think there would be other parts where the price would be so low that the general average would be about the same anyway. It never has been a serious detriment to the lot in permitting a 30-inch or 40-inch pipe line to cross these lots, and I do not think the people would so consider it in the light of the information that I have on the subject. I don't think it would seriously limit the possibilities of development of the lot, and its uses. Buildings have been put on them, and they excavated sufficiently for their purposes in every case. There is a possibility that it would limit the development of the lot, but not a very strong probability in my judgment; with the type of buildings that would probably be built on that property, the pipe line would never interfere with them in any way, unless it breaks and washes them away.

8669 I know something of the cost of condemnation suits, and they are rather expensive, and the outcome quite uncertain. The jury will give the owner a shade the best of it, and in many cases will go far beyond that. Companies are not loath to file the suit in condemna-

tion, but then they sit back and negotiate, and the right of way man does the rest. I think they are loath to go to trial in condemnation suits. In some cases it has been my experience that a company is willing to pay quite a little more than the real value of the property, or of the right taken.

In the case of subdivided property of the character that this pipe line crosses, the value of the whole lot is so small that it does not pay to condemn a right of way, but I would not expect to pay even under those circumstances close to the going value of each lot in order to get across, unless I was taking a fee title to the property.

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If a company was considering getting a pipe line easement across this subdivided property, and I was advising them as to what course they should pursue in getting the rights, I would advise following the streets; the streets are there, and they were open in 1913; there is an alternative line open through those tracts that very closely approximates the pipe line as it exists today. If the company was desiring to build the pipe line through those lots, and did not go in the streets, the practical way to handle it would be to send out three or four different people and let them work around and buy up these lots through which the pipe line would run, but after you have done that, you have a different right than you have today; you have not any right today that would prevent anybody buying these lots and building houses over them, and putting fences around them, and interfering with the maintenance of your pipe line. If you buy the lots, you have a different right of way value. I don't think it would cost you as much to go out and buy an easement merely across these lots. I think if you could assure these people that the pipe line was under the ground, and never would interfere with them in any way, the money they received for such a right would be easy money to them. The right that you have there, I think, could be acquired for the price I put on the right of way. That is my best judgment.

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I understand that the company has the right to go in and make repairs on that property, and I think that the company could assure these people that the interference to them would be negligible.

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I valued the right of way across Mt. Olivet Cemetery upon the same basis as I valued Holy Cross Cemetery, but Woodlawn and Greenlawn, and Cypress Lawn, I have valued at the original cost to the company. The cost of \$12,000 on page 17, covers other items; it covered a portion of the third line, of \$7,632, and the total of the three items is equal to the amount there shown as the original cost. The \$12,515 covers all of Parcel No. 181. That included some lots, Serial No. 18, a portion of Serial No. 14, and Serials Nos. 12 and 13. I think my figures exceeded the \$12,000. I valued the Cypress Lawn upon a cost basis, and Woodlawn and Greenlawn practically upon a cost basis; I found that my figures were greater than the cost. I did not get

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my figures in the same way that I did in connection with Holy Cross; where you have a fee title I took the value of the lot not impressed with the cemetery use. The date of the purchase of these easements was about the same time that Cypress Lawn was bought in 1907 or 1908.

8674 In getting the value of the easement across Holy Cross Cemetery, I assumed a width of 20 feet, and then upon the area so computed applied what in my judgment was the value of the land not impressed with the cemetery use, and then I doubled that figure. In the case of Mt. Olivet the conditions are different; in that case I took the value of the land not impressed with cemetery use, and just a width of 20 feet. There was a substitutional line opened there that was so much better than the line through the cemetery that I considered that my figures were ample to cover the cost of that right of way. On the right of way through Mt. Olivet Cemetery, upon which I have placed a value of \$1,824, I have put that on in accordance with my idea of the cost of this line as it exists.

8675 When you ask me to assume a willing seller, I understand you mean a person who was willing to sell, assuming that the cemetery company was willing to sell an easement for pipe line purposes, provided it could get what it, the cemetery company, considered a reasonable figure, and under those circumstances I think that the cemetery company would sell an easement for right of way purposes through the cemetery half a mile long for \$1,824. At the time this right of way was acquired it was all in Villa Avenue, through the Abbey Homestead, which included the portion which is now in Mt. Olivet Cemetery. I do not think the company paid anything for that right, and as far as I could find out, they did not.

8676 The pipe line through the Mt. Olivet Cemetery runs approximately parallel to the road in the cemetery. I think about two-thirds of the way across the cemetery there is in use for cemetery purposes, and the other is truck garden. It is a fact that the area between this road and the pipe line has been left unoccupied by graves, and practically not in use. I don't know as the cemetery people would consider this ground between the road and the pipe line as unavailable. They have used the property on both sides, but I do not think that the cemetery authorities feel that they have no right to use it if they choose to, but they have not seen fit to use it. The pipe line is there, and that may be the reason that they have not seen fit to use it; I did not ask them.

Referring to page 17, Items 12 and 13; I have there a right of way across Greenlawn Cemetery 830 feet long, and 132 feet wide, and I computed the acreage on that and found 2.539 acres, and I valued the land at \$1,500 an acre, and took my acreage and applied that price per acre, and got my figure of \$3,808.50. I did identically the same

thing with Woodlawn Cemetery. I may not have been entirely clear in my statement when I said that I valued it according to cost. I valued it and found that it was practically the cost of the land, and that was the value, and consequently I did not change my figures at all. Also I did not make any attempt there to exclude any of that right of way as not useful; there is over 100 feet of that right of way that is not useful for water company purposes. I am valuing this as it stands, but I did not double the price here as I did in Holy Cross, as I found the conditions here different than at Holy Cross. I considered each particular tract that I came to, and I did not make any attempt at consistency in my figures; I valued things as I found them. I came to a cemetery, in the case of Holy Cross, and I arbitrarily doubled my figures, because it was a cemetery, and in order to be fair to the company.

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In these cases I applied the same rate per acre of \$1,500 in each case, but I did not double my figures. I quadrupled the width, however. I did not make any deduction on account of the fact that it was a greater width than used, but I considered it; it was in my mind at the time that I placed the value on it. In other words, I considered it equitable in the one case to increase the price, and I did not consider it equitable in the other. My whole appraisalment of right of ways is based on the theory of my determination of what I considered to be equitable in the particular instance. The value which I have placed on this land in the cemeteries per acre is exactly the same that I have placed on the adjoining land outside the cemeteries. I do not consider that the land inside the cemetery has a greater actual value than the land outside. The cemeteries were not improved in 1913. Greenlawn and Woodlawn were not improved through that portion which the right of way runs through, only for a small strip alongside the road leading into the cemetery from the State Highway or from Mission Road. In the case of Cypress Lawn there is very little improvement today. In the case of Greenlawn there is some improvement right up at the right of way; Woodlawn is improved on a little strip on each side of two roads that runs from the State Highway or Mission Road back into the occupied portion of the cemetery. In the case of Greenlawn a portion of the cemetery is improved right up to the line of the right of way, and in the case of Woodlawn it is not, nor in the case of Cypress Lawn. They were not improved in 1913. I was traveling out that way very early in 1914, and they were working on it at that time. In the case of Cypress Lawn I think there is about 300 feet on the south side that is improved; in the case of Greenlawn the cemetery is pretty well improved, but not clear across it right up to the right of way, but the right of way is not improved.

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At Woodlawn, the present time, they are using a good deal of land for raising of flowers; it is under cultivation, but it is not in

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use for cemetery purposes, excepting some distance west of the right of way.

Referring to page 32, Item 38: I omitted valuation on that item because it was a public street, and was opened by ordinance April 26, 1910, and was not a public street before that time. My valuation was made as of 1913, and though it was not opened in 1910 before I made my valuation, I simply put it down as a public street. It would possibly come more properly under the head of right of way, formerly private roads, now public road.

8681 My value of \$500 for some 2800 feet of tunnel easement at Lake Honda was put on largely because of the experience of the city in purchasing rights of way for the Twin Peaks Tunnel. I do not think that property owners would be more willing to convey a right of way to the city of a tunnel such as Twin Peaks Tunnel, than they would a right of way to the Spring Valley Water Co. for a tunnel for water purposes. I do not think they would be any more willing to sell on a reasonable basis in one case than in the other. I have never bought any tunnel right of way. The Niles Tunnel, on the Western Pacific, came within the limits of the right of way or particular district that was under me, and I know something about it. They had to pay practically for the land there; I think probably the reason they did so was because it was a low priced land, and I do not think they paid more than the value of the land, excepting to the Spring Valley Water Co. The portion that they bought from the Goad Estate they paid practically the value of the land for, as I recall it.

8682 Questioned by Mr. Greene.

The lots inside that Mt. Olivet Cemetery on each side of the right of way sell for \$1.50 per foot, and I think the land which is covered by the right of way would be equally valuable. There is no distinction between that land, from a cemetery standpoint, and the land that is used for the right of way.

CROSS EXAMINATION BY MR. OLNEY.

8683 From a strictly cemetery standpoint, I think the conditions are the same in all the cemeteries, but the prices are not the same. In the Woodlawn Cemetery the average is about \$1 a square foot, and in that portion of the Holy Cross Cemetery it is about 41½ cents a square foot. The price in Woodlawn is \$1 a square foot. In Greenlawn they have a scale of prices, but I do not know the average; I think this portion of the cemetery that the right of way passes through is about \$1.50 a square foot, and in Cypress Lawn about \$1, and in Holy Cross 41½ cents. That covers the portion of the cemetery that the line passes through.

RE-DIRECT EXAMINATION BY MR. SEARLS.

These prices are the net prices, and do not include perpetual care. When I stated to Mr. Olney that I had estimated these rights of

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way parcels as an equitable proposition, I did not mean that I set myself up as a judge in equity in deciding the case between the parties on the question; it is just a matter of my judgment as to what is a good, fair value for the right of way, irrespective of the owners.

With respect to Woodlawn and Greenlawn, the item of \$12,000 shown on page 17 included other items besides the portions of the right of way I valued opposite them; it covered all the parcels there that are noted, as No. 181, which includes Serials 12, 13, part of 14 and 18. I checked all the items against the \$12,000, but I did not make any attempt to separate them.

8684

With respect to the rights of way through city lots, where the company has no record title, I found that the company had made an agreement with Mr. A. D. Connelly, of the Spring Valley Lumber Co., in which the company made certain settlements with him with reference to the pipe line crossing his property on San Jose Avenue. The agreement with him was that they abandon their claim to the right of way, and any title to the property, and Mr. Connolly agreed to allow the pipe line to remain there for a period of ten years, and after that time, if the Spring Valley Water Co. wish to leave the pipe there any longer, they were to acquire a right of way 20 feet wide across the property. It was practically an option given the Spring Valley Water Co., and the price was to be determined by arbitration. I also found this other case of the hotel on San Jose Avenue where the company had a verbal agreement with Mr. Countryman that when this pipe line was worn out, they would move it over into the street. Those are the only two instances I found.

8685

8686

Mr. Greene: I was in charge of this matter with Mr. Connolly, and Mr. McDonald's statement is entirely inaccurate. The Spring Valley Water Co. had a lot of land crossing San Jose Avenue, which Mr. Connolly had been using, and in adjusting the rental of that land, and on account of the broken pipe that occurred on his premises, for which he claimed damages, this agreement was entered into, because the San Andres pipe that went through there was so old that it would have to be relaid within the next ten years. Mr. Connolly was very anxious to get the pipe off his property, and he also wanted the use of the lumber yard which the Spring Valley owned. This was simply a mutual arrangement about the land, and had no reference to what Mr. McDonald has been talking about at all; in other words, it covers a whole lot of other matters besides. The right of way was merely an incidental matter. The principal matter at issue was the lease of what is known as the Spring Valley Water Co.'s lumber yard. The right of way was in controversy, but it was not the principal matter at issue. The whole issue arose through the pipes bursting and flooding the lumber yard there, which, it seems to me, illustrates one of the possible contingencies which the owner who sells a right of way might take into account.

8687

8688

RE-DIRECT EXAMINATION BY MR. SEARLS.

In my experience in acquiring railroad rights of way, the elements of damage were always considered, but it was nothing that I could ever separate from the value of the property.

8689

RE-CROSS EXAMINATION BY MR. OLNEY.

8689a

I always took into consideration the damages, but I never kept them separate from the total price paid in buying a right of way. The amount that I would pay per acre for a right of way would vary as between different tracts, or as between adjoining tracts, depending upon how much one was damaged as compared with the other, although the land intrinsically is worth the same. I have not valued in this right of way each particular portion of the right of way in accordance with what I believe to be the value of the abutting property. I have taken into consideration every time the damage from whatever cause.

8690

Referring to page 3: There is a difference in intrinsic values between the first item on that page, and the second item. The second item is the more valuable, and the third item is still more valuable. The item from Station 803, to Station 806 plus 99, is of about the same value as the third item; this is a little bit more advantageously located to Walbridge Street, which would make some difference.

8691

In the valuations that I have placed on this property, I have put values on them which correspond relatively to exactly what I have testified; I have put a valuation of—referring to acreage prices—\$750 on the first item, \$1,000 on the second item, and \$1,500 on the third item. In order to get my value of the right of way, I have taken these acreage prices and have applied them to acreages in the right of way. In the third item in serial 29, there is no element of damage due to a trestle; there is just a negligible element in it in that case. In the fourth item, item 30, an element of damages does come in, and the land is somewhat more valuable than item 28, but I would not consider it more valuable than item 29, although it is coming closer to Walbridge Street all the time. I have taken the value of the land and the severance damage as the value of the acreage in that case, but I have not omitted any item of damage; it is all there in this latter case.

8692

Witness: COTESWORTH B. HEAD for Plaintiff.

Head

DIRECT EXAMINATION BY MR. GREENE.

I reside in Berkeley. I am the purchasing agent of the Spring Valley Water Co., and have been purchasing agent since October, 1913. I have been in the employ of the company since 1906 in

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various departments. As purchasing agent I have had occasion to ascertain the cost of various materials that are normally used by the company in the operation of its business. I have read the testimony of the various engineers who referred to prices obtained from me of costs in 1913 for sand, gravel, brick and cement, and I am familiar with the testimony of Mr. Lippincott, Mr. Hazen, and Mr. Lawrence, on that subject. The amounts that were named there are correct.

8693

CROSS EXAMINATION BY MR. SEARLS.

Prior to 1906 I was employed for a short time with the Royal Insurance Company.

Witness: LEONARD METCALF for Plaintiff.

Metcalf

DIRECT EXAMINATION BY MR. GREENE.

We have found the subject of original cost an exceedingly difficult and complex problem. We attempted in the first instance to see if we could get a direct comparison between the reproduction cost of the principal structures and the original cost of the structures. In the great majority of cases that was found to be impossible. We have already given, I believe, substantially all of the data which we have concerning the original cost of the segregated structures, or groups of structures. What I am about to give now is a statement of the construction cost from year to year since the inception of these projects; that is, the formation of the two predecessor companies and the Spring Valley Waterworks, going back to 1858, and bringing it down to date. In doing this, we have found that the accounts of the company have been kept upon different principles and methods during this interval of time with respect particularly to the overhead and the interest during construction costs.

8694

In making up the figures of original cost, we found that the greater part of the original records have been destroyed in the fire, so that we have had to make use of the evidence of Mr. A. Wenzelberger, representing the City, and Mr. George W. Reynolds, representing the company, in the 1903-04 rating suit, as applied to costs up to 1903, inclusive; after that time the record was based in part upon the reports to the City, and since 1906 upon the books of the company which have been kept in very good shape, and in detail form since that time.

The accounts of Mr. Wenzelberger and Mr. Reynolds, in general, agree, the difference being on construction cost, approximately \$10,000 within the period of time cited. The chief difference between the two comes in the fact that Mr. Wenzelberger did not make the segregation in the detail that Mr. Reynolds did, and in many cases the construction accounts were carried forward virtually as suspense

8694a account until they were charged into the plant account. In those cases we have had to make use of Mr. Reynolds' segregation in order to charge the construction costs into the year in which they were incurred, as correctly as possible.

With reference to the treatment of overhead and interest-during-construction; on reviewing the testimony of Mr. Wenzelberger and Mr. Reynolds, given in the rate cases from 1903 to 1905, we found in some cases they had included in their analysis of the original cost of the property of the Spring Valley Water Co., overhead and interest-during-construction costs, on account of the fact that the books of the company were apparently kept in this way during the period of years from 1858 to 1875; that is, during that period they had included overhead and interest-during-construction allowance, although we are not able to pass intelligently upon the interest-during-construction allowance, because the amounts were lumped, and we have no means of testing them; on the other hand, we cannot tell just what structures were covered by the payments upon the structures.

In the period from 1875 to about 1894 the company changed its policy, excluding overhead and interest-during-construction costs from the original costs of the work, except as these may have been accounted in the operating expenses of the company, and with perhaps some individual cases such as the Crystal Springs Dam, in which there was incorporated in the cost of the structure some allowance for certain overhead costs.

From 1894 to about the end of 1907 the company again accounted overhead and some interest-during-construction costs, at least in the original costs of the company, and in the operating expenses, as had been done in the previous period referred to above.

8695 Questioned by Mr. Searls.

I am testifying from the books of the company as to past practices, and from the Wenzelberger and Reynolds exhibits, and the reports to the City, and such records as the company has that are available.

8696 Mr. Sharon: We used the Wenzelberger and Reynolds exhibits, the Municipal Reports, the maps and records which we had saved from the fire in the engineering department of the company, some newspaper clippings, and some account books known as journals which we have in the engineering department of the company. These records we used principally to aid in distributing to the proper years in which expenditures were made for construction the amounts that were spent in those years. We did not make any change from the aggregate totals of Wenzelberger or Reynolds in the amounts that we split up. For example, in Wenzelberger's exhibit the Crystal Springs Dam is charged in the construction account as of the year 1892, at about \$2,250,000; in the analysis which we made here a deduction was made from Wenzelberger's into the construction account

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of 1892 of \$2,250,000 for the Crystal Springs Dam, and the amounts aggregating \$2,250,000 were set in the years 1886 to 1890, the years in which the work was actually done. The purpose of that was to get the original cost in the years in which the company actually expended the money, and I presume for the purpose of making for Mr. Metcalf the analysis which he wanted to use to show up the development expense on the original cost basis, and also to check up the issues of the securities as they were issued from year to year.

The exhibit of Mr. Reynolds, Exhibit 111 in the 1903-04 rate case, showing the general construction account from 1866 to 1880, has been checked in detail with Mr. Wenzelberger's Exhibit 101 in the 1903-04 rate case, and the annual charges are identical in both exhibits. In the Reynolds Exhibit 111 the segregation has been made as between accounts; this table shows the interest and the salaries. The interest-during-construction is the interest shown on this table. It was charged into construction. This Reynolds exhibit is an exhibit of the construction expenses. For example, item No. 13, on this Exhibit 111, shows salaries, which was overhead, in the year 1866, 1867, 1868, 1869 and 1870. Then there is not anything shown until 1876, 1877 and 1878; and nothing shown for 1879 and 1880. In the analysis that we made of the original cost, those amounts under the heading of salary were deducted from construction expenses and added into operating expenses. Item 24 is contingent expenses, which Reynolds, in his testimony, says is practically all interest. The contingent expenses, charged to general construction in these years, as shown on Exhibit 111, were charged from 1866 to 1870, inclusive, and not again during the entire period from 1871 to 1880.

I deducted all of the items covering administration, such as salaries, engineering expenses, engineers' salaries, surveying expenses, recording fees, and matters of that kind which were overhead, and I also deducted from the construction accounts the discount on bonds, discount on stock where it had been charged in, the interest on floating debt, coupon interest and discount on silver. If the segregation here were proper, these items of interest-during-construction, and salaries during construction, might properly be chargeable into the construction account as part of the overhead, but the reason we made the elimination was that for the greater portion of the time the charges were not included in the construction. We wanted to make the table comparable throughout, exclusive of overhead and interest-during-construction. If we had assumed the charges in our records as shown in the exhibit, we would have had interest-during-construction, and overhead on a portion of the construction only.

Mr. Reynolds states, in his testimony, that there was not one dollar of interest charged to construction from 1878 to 1903; there was charged in the construction accounts something like \$15,000,000,

or \$16,000,000 for construction expenses during those years, so the inclusion in the earlier years would have been only a small portion of the overhead and interest.

8700 I used the newspaper records and journals of the company, and the other sources, except these exhibits of Wenzelberger and Reynolds', simply as corroborative evidence as to the time when certain structures went into use and went out of use, simply confirmatory of these figures, which in some cases I was not able to assign to the proper years. All of my knowledge of the years is not based upon that kind of information. For example, the journals of the company in the engineering department show the operation of all the structures. That is, the reservoirs, the pumping stations, and the amount of pipe laid during each year. I used those records for the purpose of getting at the amount of pipe that was laid in each year in tons, and the pipe that was taken up and abandoned in tons; that was made particularly with reference to the property out of use, and those that were used. The analysis which Mr. Wenzelberger shows of some charges in his outstanding accounts I had no means of assigning to years in which the work was done, other than reference to the journals, to the trial balance sheets worked up by Mr. Reynolds, which were not put into the case before, but the amounts shown here check up with those exhibits. I know that those were in Mr. Reynolds' possession, and that he used them after the fire for the purpose of getting at the original cost of properties that were brought up to the time that these trial balance sheets ran, which was about the year 1880. I did not want to take any of these evidences or records as complete, unless there was other confirmatory evidence in the other sources that I mentioned—the Municipal Reports, for example, give a lot of that data. It would not have made any difference in the grand totals that I used whether I used those records or not; it was more for the purpose of getting it into the proper years that these records were used as an aid.

8701

On the analysis that I made it did not make any difference as to the totals I reached for the income and operating expenses for those years as showing the net income of the company, because I simply made a list of the tabulations of the income by years as shown by Wenzelberger and Reynolds, which I modified by deducting discount on silver in the seventies; it was a small amount, and it didn't make any difference in the operating expenses in the total except in so far as I modified the operating expenses by adding into them the overhead items that I took out of construction. To that extent it increased the operating expenses, and decreased the net income.

Mr. Metcalf: Mr. Sharon neglected to mention, among the other sources, the books of the company as they have been kept since 1907.

Since January 1, 1908, the company has followed the present method of accounting, under which, with two notable exceptions,

none of the overhead or interest-during-construction costs are charged into the original costs, the exceptions referred to being, first, engineering and interest-during-construction costs incidental to the building of the Calaveras Dam; and second, the costs of the purchasing department, which, since October, 1913, has been distributed over new construction involved. During this later period no apportionment has been made of the administrative, collecting and accounting departments, the entire cost thereof being charged to operating expenses.

8702

Starting with this material, we attempted to get the original cost of the entire property, excluding only portions thereof which had been subsequently sold, with and without overhead and interest-during-construction allowance, without deducting for abandoned lands and structures, lands or structures never in use, or depreciation upon existing structures, and without allowance for depreciation of property.

Second: The original cost of the depreciated property, that is, of the entire property less that sold, abandoned, or never in use, with deduction for depreciation upon existing structures, and without allowance for appreciation in value, and for development expense.

Third: The original cost of the existing properties, with allowance for development expense incident to the building up of the business, and the revenue of the company, with allowance for depreciation, but without allowance for appreciation in the value of the property.

Then the original cost in a similar way, that is, on the same basis, except making an allowance for appreciation in property values, and finally, the original cash investment of security holders in the entire property, excluding earnings reinvested in property.

We found it was exceedingly difficult to make all of these computations, and by reason of the tremendous effect of compounding the interest upon the deficits, and excess earnings during so long a period of years at the fair cost of money which has prevailed here, the factor was so high as to make the results exceedingly speculative. For instance, the multiplying factor for expenditures or deficits in the early sixties, at the rates of interest which have prevailed, amounts to something over 40, so that if you made an error of \$100,000 in that year, and had that deficit, it would amount at the present time to about \$4,000,000; it resulted in such tremendous development expense figured on that basis that we gave it very little consideration. The results thus obtained I will submit to you under the head of development expense, but they do not seem to us as of great significance.

8703

Summing up briefly the results of the study which we have made, it seems to me that these are the essential facts of interest as I see

them; I will present subsequently tabulations showing the basis for the determination, how we got our results, etc.

First: The reproduction cost of the structural plant, as worked out by Mr. Hazen, appears to be about 10% in excess of the original cost of the structures, excluding overhead allowances and interest-during-construction in each case, as between Mr. Hazen's total and the original cost figure, Mr. Hazen's figure being obtained by taking 100 divided by 128.8 of his gross reproduction cost, including overhead and interest-during-construction, and which amounted to about \$25,000,000 in round numbers.

8704

The comparison on the basis of inclusion of overhead and interest-during-construction cannot be made, I believe, with any degree of certainty, for the reasons to which Mr. Sharon has just referred. The original accounts indicate that in certain years the overhead expenses were included in the operating expenses; in other years they were included in the cost, and in still other years they appear to have been a division of the two, so that we have no means of determining just what the overhead costs were. In certain years there was no allowance for interest-during-construction; this relates to a very large part of the original construction, so that we have no means of determining, even with substantial accuracy, the actual interest-during-construction cost. For that reason, it seemed to me wiser and safer to eliminate from the original cost estimate the overhead and interest-during-construction costs, and to make our fundamental comparison between reproduction cost and original cost on the basis of excluding overhead and interest-during-construction charges. The elimination which we made from the original cost figures were the following.

8705

First: The elimination from construction account of operating expenses, taxes and overhead expenses, including in the latter engineering, administration, commissions, recording fees, miscellaneous expenses on account of changes from time to time by the company in its practice in not accounting overhead to construction, and to operating expenses.

Second: The elimination from construction account of interest-during-construction, coupon payments, interest upon floating debt and contingent expense, which Reynolds stated was practically interest, because these interest payments bore upon rate of interest, and no means were available for determining the fairness of the charges, and they were clearly not complete.

Third: Elimination from construction account of discount upon bonds and stock, and discount upon silver, the latter being accounted by deduction of the cost of exchange from the gross revenue; that was the actual exchange.

Fourth: Elimination from operating expenses of the discount upon silver, taking it as stated, as a deduction from gross revenue.

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Fifth: Addition to operating expenses of the operating expenses which were found in original construction, the taxes and overhead costs referred to, which were originally included in the construction account. Note, however, that the interest was not added to the operating expense, as previously stated.

Obviously, the interest-during-construction cost, and the administrative costs of building the works, that is, the original cost of those items, would probably be less than in any reproduction cost, by reason of the fact that the administrative officers would have a certain amount of work, both in the operating department and in the construction department.

Similarly where the work is done piecemeal, the interest-during-construction costs are likely to be less than where the work is reproduced as a whole, and certain structures stand idle until the plant is ready to operate in large units. In an effort, however, to get something which might in a degree be comparable, we made an allowance of 10% overhead cost upon the structures, and in the case of lands, 2% for overhead cost; and for interest during construction, one year's allowance as against the 2 years assumed by Mr. Hazen and myself in figuring the interest-during-construction under reproduction cost estimates. The rate assumed was that which appears in a computation which I have called the fair cost of money to this corporation in the life of the corporation; in other words, the fair cost without profit allowance, which varies approximately 18% at the very beginning, running down to 12½% in 1866, 6½% in 1888, 6% in 1902, and 6% thereafter. The average interest-during-construction allowance throughout the period as predicated upon the investment in structures from year to year figures out upon the lands 7.7%, and upon the structures 8.88%, up to the year ending December 31, 1913, which sum is comparable with the 12% allowed by Mr. Hazen and myself in the reproduction cost estimate. The 10% allowed upon the structures is comparable with the 15% allowed in the reproduction cost estimate. That is a weighted average predicated upon the actual expenditures upon construction from year to year.

As figured upon this basis, and with an allowance for depreciation, found by decreasing our estimate as of 1913 in the ratio of original cost to reproduction cost, we found that the resulting original cost, including overhead and interest-during-construction allowances, on the basis stated, was less than Mr. Hazen's gross reproduction cost of about 20%. In other words, it is my belief that the original cost, including overhead allowances, is approximately 20%, or to put it the other way, Mr. Hazen's figures are approximately 20% in excess of the original cost, including the overhead and the interest-during-construction allowances in each case. That is comparable with Mr. Hazen's \$25,000,000.

8706

8707

Each side in that calculation was made with and without the allowance for depreciation; the result is just about the same, about 20%—19½% I figure it.

8708

The second thing of importance which the record seemed to show is that the combined amount paid in by the stock and bond holders, without allowance for any lost interest before the dividends came, as based upon Exhibit 12BB was \$27,526,000 in round numbers; this is without consideration of the deficiency in return, or the excesses in return during that interval, as compared with the fair cost of money to this corporation, at the rates previously stated. If an allowance be made, as was made by me in that Table 12BB, of 6 months' interest upon the payments which were represented by the investment of the stock and bond holders upon the assumption that return was not immediately enjoyed, and that in many cases the funds were not permanently invested in advance of the construction, the amount would be increased, if the rate be assumed at the fair cost of money to this corporation, by approximately \$1,130,000, and would bring the total amount to \$28,567,000 in round numbers. If we take into consideration the fact that the investors did not receive in the early years from 1858 to 1866, or thereabouts, dividends on the stock, and we assume that they were entitled to receive the fair cost of the money, that is, without the profit item, and bring those computations forward, adding to the investment the deficiencies thus resulting, and subtracting the excesses in return resulting from a greater than the assumed fair cost of money, we find a capital sum as of December 31, 1913, of \$39,430,000, or as of 1914, \$40,382,000.

8709

In the third place, the records seem to indicate that the original cost of the lands and structures, without allowance for overhead, or interest-during-construction, and without deducting for depreciation, amounts to approximately \$25,424,000, and with the allowance of 2% upon lands, and 10% upon structures for overhead and administrative costs, and 7.7% upon lands, and 8.88% upon structures, to cover interest-during-construction, the total original cost thus produced amounts to \$29,460,000, and the deduction for depreciation brings this amount to approximately \$26,548,000. That in brief sums up the original cost study which we have made, excepting in so far as we may touch upon it in the computations upon development expense, which seem to me to have comparatively little significance.

Referring to some tabulations showing the method of reaching the results which I have just summarized; Tables B and B-2 will have to be modified to accord with Mr. Hazen's final assumptions with regard to property out of use. For instance, the Industrial School Reservoir was not classed as out of use in the first studies, but it was in the final, and that changed the estimates here of structures or lands not in use; the difference which it makes is not great, but it makes a difference in the class of properties covered by abandoned

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structures and lands, and structures and lands never in use, and depreciation upon existing structures of something like \$150,000. The effect upon the final figures is negligible; we are not warranted in discussing the results to such a degree of precision; the error is within 3%.

We have reconciliation sheets covering these various estimates, from which, I think, we can identify the changes that we have made in Mr. Wenzelberger's exhibit. Mr. Wenzelberger's general construction account from 1860 to 1880 amounts, I believe, to approximately \$9,883,000; his new construction from 1880 to 1903, \$15,022,000, and his outstanding accounts, which are virtually plant expense accounts, and Wenzelberger himself treats them as plant accounts, adding them into the new construction later on, \$5,281,000, making a total of \$30,136,000 in round numbers. From this deduct interest charges, discount on bonds, overhead, administration, taxes, and operating expenses during this period of years, which we have transferred to operating expenses, in order to get all of the years on a comparable basis, \$3,636,000, leaving \$26,500,000; deduct from this amount the overhead expense included in the two predecessor companies from 1858 to 1865, \$1,381,000, leaving \$25,119,000 in round numbers. Now, Table A up to the year 1904 inclusive, shows an amount of \$30,094,000, and deducting the sum from 1904 to 1914, \$5,036,000, you will find the comparable amount, up to and including the year 1903, is \$25,058,000, as against Wenzelberger's total, or our analysis of Wenzelberger's, \$25,119,000; there are some further deductions from the third class of so-called outstanding accounts, which will still further cut down that difference.

8710

We have a similar reconciliation of the investment accounts, which shows a total of \$25,038,000, against Mr. Sharon's \$25,088,000. I told Mr. Sharon I thought that was as far as we need to go in the reconciliation. These figures, of course, all relate to the period ending in 1903, or with the year 1903.

8711

Taking the tabulations which I have just handed to you, we have first Table A, original cost of property of Spring Valley Water Co. up to December 31, 1913, without addition for deficiencies in returns, deduced up to 1904 from the testimony of Wenzelberger and Reynolds as to the results of their examinations of the water company's books in the 1903 to 1905 rate case; from 1904 to 1906, from the returns filed with the Board of Supervisors, the other records up to 1906 having been destroyed in the fire, and since 1906 from the company's books. The costs of lands and structures have been reduced by the actual sales thereof.

Mr. Sharon: There were some minor sales of pumping stations, and things of that kind that had gone out of use; a small amount.

Mr. Metcalf: In column 1 I have given the several years; on the first line, the group from 1858 to 1865, which covered the operations

of the two companies which were consolidated under the name of the Spring Valley Waterworks. In the second column the original cost of the lands from year to year, excluding overhead and interest-during-construction allowances.

8712 Mr. Sharon: That was determined from the general construction and new construction accounts of Wenzelberger, Wenzelberger's outstanding accounts, and in a few cases where we had any specific facts, from some of the Municipal Reports. I simply made a subtraction of the total amount paid for lands during each of those years from the total construction charges for those years, in segregating the lands and structures.

Mr. Metcalf: In the third column are shown similar figures for the structures. That is, the original cost, excluding overhead and interest-during-construction.

Column 4, headed "Combined", is simply the sum of the second and third columns. That is, of the original costs of the lands and structures, excluding overhead and interest during construction. In column 5 is shown 2% addition for overhead allowance upon the lands, and in column 6 the 10% assumed overhead allowance upon the structures. The 2% and the 10% allowances are arbitrary, my assumption, and do not appear in the original accounts at all. A small portion of it does appear in the original accounts. The interest-during-construction was separate from the coupon interest, but we were not able to assure ourselves it was all included.

8713 Mr. Sharon: Reynolds stated there was no interest at all charged from 1878 to 1903. I stated this morning the construction was about \$15,000,000; I have looked it up since, and according to Reynolds and Wenzelberger it is pretty nearly \$20,000,000 on which there was no interest charged. If the company actually paid interest for money during those years it was put in the profit and loss account and came out of the income; it was carried in the profit and loss account as a payment for interest, just as the coupon interest payment was carried.

Questioned by Mr. Searls.

8714 Mr. Metcalf: When we figured the return in the development expense computation, we assumed that the difference between the gross revenue for the year and the operating expenses, plus taxes, plus depreciation allowance, plus a fair rate of return on the investment today, was actual return, and that actual return was disbursed in different ways, partly for interest upon the bonds, partly by dividends, and partly by re-investment in new construction, but we accounted as return the difference between income and outgo. If interest-during-construction was included during these years as an operating charge, we took into account the excess that we did not take into account in this interest-during-construction allowance which we made here, and which I have already referred to, you re-

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member, a certain percentage upon the lands, and a certain percent for interest-during-construction upon the other; of course we did not duplicate those.

We excluded the interest-during-construction both from construction and from operation; we accounted the difference between the gross revenue and the operating expense, that is, the outgo as the return. We were not able to determine from Mr. Reynolds' statements just how much that interest was. We treated in a similar way the money expended in coupon interest; that, of course, was not added into construction either. Of course we consider that in the computation of the return upon the investment.

As I see the situation at the moment, if you reduce the operating expenses, or increase the operating expenses, either by deduction or by addition, you find a compensating effect in the excess or deficiency in return which you get year by year, which is carried into capital account, but I should very much prefer to discuss that with the actual figures before me, so that I can refer to the columns in which they appear, because it is exceedingly easy to talk at cross purposes. So far as this Table A is concerned, there is no reference to the operating expenses; it is purely construction. 8716

In column 8 is shown rate in percent assumed as the fair cost of money to the corporation year by year.

Column 9-A is the assumed interest-during-construction allowance based upon the rate shown in Column 8, and the land investment shown in Column 2. In Column 9-B is figured the interest-during-construction upon the same assumption, that is, one years interest at the fair cost of money shown in Column 8, and in Column 9-C is shown the total amount. At the foot of Column 9-A is the percentage 7.7% interest-during-construction allowance upon the lands, being the quotient found by dividing the total interest allowance by the total investment in lands, that is \$711,466 divided by \$9,232,018. 8717

Questioned by Master.

I think we found afterwards that we had excluded the overhead. My formula at the head of Column 9-C is multiply Column 8 by Column 7, and the result thus obtained is equal to the sum of 9-A and 9-B. The interest-during-construction allowance shown in Column 9-A is figured upon the sum of Columns 2 and 5, and the same is true of the structures. I seem to have taken the percentage on the basis of the original cost. The footing 7.7%, had it been predicated upon the sum of the amount shown in Columns 2 and 5, that is, including overhead, the amount, instead of being 7.7% would have been 7.56%, a little less than 7.6%.

Questioned by Mr. Greene.

In a similar way the amount upon the structures, \$1,830,000, divided by the sum of the structural items \$20,608,871, shown at the foot

8718 of Column 3 as of 1913, plus the amount shown at the foot of Column 6, \$2,070,193, the two latter sums totaling \$22,679,064, would have been approximately 8.1% instead of the 8.88%.

In Column 10 is shown the sum of the additions on account of overhead and interest-during-construction, totaling the amount of \$4,797,642 as of December 31, 1913. These amounts shown in Column 10 when combined with the original cost items, excluding overhead and interest-during-construction, shown in Columns 2 and 3, and the sums shown in Column 11 covering the total original cost of the property including the assumed overhead and interest-during-construction allowance, and excluding the development expense, or deficiencies and excesses in revenue, total the sum of \$34,638,529 as of December 31, 1913. The amounts which appear in this footing as of December 31, 1913, are, I believe, the amounts carried over in the discussion or analysis in the following tables, Tables B, and B-2.

Questioned by Master.

8719 On the line underneath the December 31, 1914, I give you the equivalent overhead allowance on the combined investment on lands and structures, excluding overhead and interest-during-construction, 6.93% as of the year December 31, 1914, assuming that a 2% allowance was allowed upon the lands, and 10% upon the structures. It was an effort to reduce it to a weighted average amount, and the same thing is true of the entry upon that line for the year ending December 31, 1914, covering the weighted average interest-during-construction allowance of 7.92%, predicated upon the original cost, excluding overhead and interest-during-construction allowance.

Questioned by Mr. Searls.

This includes all the properties that were in use and out of use; it excludes only the properties which have been subsequently sold, and in those cases we deduct the selling prices.

Mr. Searls: We have a figure of \$33,143,000, comparable with your \$34,928,000, the point of difference being principally, I suppose, in this estimated overhead.

Mr. Metcalf: Turning to Tables B and B-2; we find in Column 2 the original cost of structures, excluding interest-during-construction and overhead costs. On the first line the original cost of all structures ever built by the company, whether now in use, never used, or abandoned, but excluding structures sold and credited in the construction account, based upon Reynolds' and Wenzelberger's testimony brought down to date, and without allowance for development expense or going concern; that is, the cost of developing the business as measured by the deficit and excess in return during the period of years in question up to December 31, 1913, the total sum being \$20,609,000. The 10% overhead allowance is shown in Column 3; in Column 4 the interest-during-construction allowance, 8.88% of the

original cost, and not the original cost plus overhead allowance, and the grand total in Column 5, \$24,500,000. From that, on line 2, is deducted first the abandoned structures, second, the structures never in use, their sum being shown as the total deduction for structures abandoned and never in use, amounting in Column 2, excluding overhead and interest-during-construction allowances, to \$2,955,917; the overhead and interest-during-construction allowances being shown in Columns 3 and 4, figured on the same basis, 10% and 8.88% respectively; the total amount being \$3,567,027, shown in Column 5.

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On Line 3 we get the difference between the amount just stated and the original cost shown on the first line, giving the original cost of structures now in use, excluding overhead and interest-during-construction costs in Column 2, totaling \$17,653,000, and it is this figure which I have compared with Mr. Hazen's estimated costs and gross reproduction costs of the corresponding item, excluding overhead and interest-during-construction costs as shown by the footnote, which reads: "Comparable with Hazen's 100%, divided by 128.8%, times "\$25,126,000, equals \$19,500,000; this amount being \$17,650,000—"these are in round numbers—the difference being \$1,850,000, the "excess being approximately 10.5%." That is the computation which lead me to say that I was of the opinion that Mr. Hazen's gross reproduction cost of structures, excluding overhead and interest-during-construction allowance, and excluding any deduction for depreciation, was approximately 10.5% in excess of the original cost.

In Columns 3 and 4 are shown the overhead and interest-during-construction allowances upon the sum of \$17,653,000, giving the total as shown in Column 5, to-wit: The original cost of structures now in use, including a 10% assumed allowance for overhead, and 8.88% of the original cost, excluding overhead, assumed for interest-during-construction of \$20,933,000. This amount, is comparable with Mr. Hazen's gross reproduction cost of \$25,126,000—the difference being \$4,193,000, or approximately 20%. It is this analysis which lead me to state that Mr. Hazen's gross reproduction cost, with his assumed overhead and gross reproduction allowance was approximately 20% in excess of the original cost, including the stated assumed allowance for overhead and interest-during-construction, to-wit: 10% upon structures for overhead, and 8.88% for interest-during-construction.

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On Line 4 is shown the deduction for depreciation, based upon my own allowance for accrued depreciation of existing property, \$3,496,000, reduced in the ratio of the original cost, with overhead and interest-during-construction added, \$20,933,000, as shown above, to Mr. Hazen's gross reproduction cost of \$25,126,000, the original cost being approximately 83.30% of Mr. Hazen's upon the bases cited.

Questioned by Mr. Searls.

That would be approximately the same as applying my 13% de-

preciation to the original cost, the amount being \$2,912,000, instead of \$3,496,000, and leaving the net, or depreciated original cost of structures now in use, shown on Line 5, \$18,021,000. In the footnote comparison is made between that and Mr. Hazen's depreciated amount, and the same ratio of difference, approximately 20%, is shown as applies to the gross reproduction cost, including overhead and interest-during-construction before taking off the allowance for accrued depreciation.

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In Table B-2 following is shown a similar analysis relating to the lands. In Column 2 there is shown the original cost of the lands, excluding overhead and interest-during-construction allowance; in Column 3 the stated 2% overhead allowance assumed by me; in Column 4 the assumed interest-during-construction allowance, 7.7%, being equivalent to one year at the fair cost of money, applied to the original cost of the lands, excluding overhead allowance, and in Column 5 the sum of these three Columns 2, 3 and 4, covering then the original cost of the land, including the stated 2% overhead, and 7.7% interest-during-construction allowance.

On Line 1 is shown the original costs of all lands, and appurtenant rights, whether now in use, never used, or abandoned, but excluding lands sold and credited in the construction account, based upon Reynolds' and Wenzelberger's testimony brought down to date, the original cost excluding overhead and interest-during-construction allowance, being \$9,232,000; including then \$10,129,000. On Line 2 are shown the deductions for lands once used and now out of use, and lands never used, with a sub-total on Line 3, and leading to the original cost of lands now in use, excluding any allowance for appreciation in values; first, as shown in Column 2, excluding overhead and interest-during-construction allowance, \$7,771,000, and second, as shown in Column 5, including the stated overhead and interest-during-construction, \$8,527,000.

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Mr. Sharon: The figures in dollars of "never used" came from the Reynolds' and Wenzelberger exhibit, and the company's books.

Mr. Metcalf: We intend to make the figure \$1,227,000 include the lands that Mr. Hazen suggested were out of use, and that is the revision to which I referred that we have got to make in order to make it agree with his. The final table, which I will hand to you in corrected form, will exclude his along the lines of his separation. His total includes also lands which were not valued in this suit; in other words, with regard to which no evidence has been adduced in this suit. That is lands that never were in use, and never were claimed to be useful, but they were taken out at cost.

There follows a summing up of these two tables, leading finally to the line bearing the legend: "Original cost of structures and lands "now in use", in Column 2, excluding overhead and interest-during-

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construction allowances, \$25,424,000; in Column 5, including the assumed overhead and interest-during-construction allowance, \$29,460,000, the deduction from the latter being the depreciation allowance of \$2,912,000, leaving the net original cost of the structures and lands and appurtenant rights now in use, less accrued depreciation, excluding any allowance for appreciation in value, or for development expense, \$26,548,000. That includes water rights which are classed with the lands.

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We come now to the group of tables which was put in by Mr. Sharon as "Exhibit 12BB", and which has been revised to accord with the corrections referred to at that time. The portion of the table labeled "12-BB", relates to the bond holders and stock holders actual cash investment in the property without any allowance for the deficiencies in return, or deduction for the excess in return over the assumed fair cost of money to this corporation without profit, and the portion of the table labeled "12-CC" covers the same computation, including allowance for deficiencies in return, and deductions for excess in return, as compared with the fair cost of money without profit to this corporation. Column 18 shows my assumptions as to the cost of money. That is the same was shown in Exhibit 12-CC.

At the foot of the column are the combined amounts paid in by stock and bondholders, without any consideration of deficiencies or excesses in return, amounting as of the year ending December 31, 1913, to \$27,526,402. That is added on the theory that where the funds were raised in this way it was probable that the funds lay idle for a certain amount of time before they were put into use, and we have accounted in figuring the deficiencies, or excess earnings in return, shown in 12-CC, the fair return after the investment was made, that is, on the year following the putting in of the amounts. It has been my experience that where securities are issued in this way, a certain amount of the construction work is done before the securities are issued. This is particularly true where you are doing piecemeal construction; the trustees prefer to issue the bonds after the construction is completed, and not in anticipation of the construction. Under those circumstances, money has to be borrowed on temporary loans to carry the construction work until the debt is funded in final form, and there results a certain interest-during-construction—interest carrying charge is a better word—until the final funded debt is issued, and the interest rate is taken care of through the coupons or dividends. That was the theory, and if it seems to your Honor that it should be excluded, the amounts are separately stated in the column, so that you can treat it in either way that seems fair to you. In the same way, on the line corresponding to the year ending December, 1913, you find the total capital sum as of December 31, 1913, \$39,430,396, and as of the following year \$40,381,836. I might also call attention to the percentages

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shown in column 24, the actual return upon the capital sum, for comparison with the assumed fair cost of money shown in column 18.

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Questioned by Mr. Searls.

The company did make money for a portion of the time when they did not have any regulation; for a portion of the time their returns were higher than we should consider proper today in public service corporation operation.

(Original Cost, Leonard Metcalf and J. J. Sharon, November 27, 1915, introduced and marked "Plaintiff's Exhibit 170", and "Plaintiff's Revised", and "Plaintiff's Exhibit 12-CC".)

Columns 18 and 24 are based upon the cost of the money raised on bond issues, and on the stock issues, and on profits of the water company which were reinvested.

ONE HUNDRED AND TWENTIETH HEARING.

MARCH 21, 1916.

Witnesses: LEONARD METCALF for Plaintiff.

JOHN J. SHARON for Plaintiff.

GEORGE GRAY ANDERSON for Plaintiff.

JOSEPH N. LeCONTE for Plaintiff.

8728

Witness: LEONARD METCALF for Plaintiff.

DIRECT EXAMINATION BY MR. GREENE.

We made the effort also to make a segregation between the construction cost and overhead, and interest-during-construction items on the San Francisco City Waterworks and the Spring Valley Waterworks, the first of which was incorporated in 1858 and the second in 1860—incorporated and began operation at least in those years, and which were consolidated in June, 1865. We found the same difficulty there that we have in the general records of original cost, that the data is not complete. Mr. Wenzelberger has a fairly detailed statement concerning the operations of the Spring Valley Waterworks, but not concerning the operations of the San Francisco City Waterworks; Mr. Reynold's segregation of the first is somewhat more complete. We have used both of these sources, and certain of the Municipal Reports, to-wit, from 1874-75, and some of the trial balances of Mr. Reynolds' which were not destroyed in the fire.

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Questioned by Mr. Searls.

It is Mr. Sharon's understanding that those trial balances Mr. Reynolds made use of himself in his early studies.

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Mr. Sharon: I do not know that Mr. Reynolds made out those particular statements, but I do know that he made out some sheets, and that I worked on some of them which were summaries of these trial balances; the summaries simply went to show the construction charges each year. I think that these papers that I found were Mr. Reynolds' trial balances, because he used them himself after the fire, and because the totals of the 12 months charged to construction check up with the charges used, both by Reynolds and Wenzelberger in their exhibits, in the general construction account from 1860 to 1880. He was working on them after the fire, as he was making up a list of properties, the years in which they were bought, and the original cost of them. I know that from my own experience, because I worked with him part of the time on that. He never told me that these were his trial balances. I simply assume that they are his from the fact that the figures check up with his own figures, and Wenzelberger's, in the 1903-04 case.

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The totals that are shown as of June of each year, when the accounts were credited, and the construction account charged with these amounts, the amounts shown there check up with the construction accounts of Wenzelberger and Reynolds in the 1903-04 case. All of the annual figures check; I have no means of checking the monthly figures. About the only use that I remember that I made of those trial balance sheets was in the case of outstanding accounts, and I do not know but what it was only the real estate in San Andres account. The two accountants show in the outstanding accounts a certain sum of money for real estate in San Andres, and I wanted to find out in what years that money was spent, and I referred to the Reynolds trial balance sheets for that. The account stated "Real estate, San Andres"; it showed the amount of money that was charged each month, and the amount that was charged off at the end of each year, and by adding up the several years in which the charges were made, the total agreed with both the outstanding account of Reynolds and Wenzelberger. I do not think I used that for the purpose of segregating the lands from the structures. The use that I made of these records was simply for the purpose of distributing some amounts to the years in which the amounts were expended as nearly as could be shown from these trial balance sheets. I did not change the total figures of either Wenzelberger or Reynolds.

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Mr. Metcalf: Mr. Reynolds gives us in his Exhibit 111 of the rating cases of 1903 to 1905 the general construction account entry, "Construction balance, debit, June 1, 1865, \$3,355,032.54." Mr. Wenzelberger, in his Exhibit 101, pages 12 to 14, gives, "Balance, January "1, 1865, Spring Valley Waterworks, \$1,647,084.92." And then a second entry covering the property of the San Francisco City Waterworks, amounting to \$1,706,926.47, making a total of \$3,354,011.39,

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differing from the Reynolds figure by about \$1,000. To the latter sum we have added four small entries which were taken from Wenzelberger's outstanding accounts, which were not included in the general construction account stated above, as follows:

The first item, covering the Lake Honda property, on page 17, \$2,930, or rather sundry items aggregating \$2,930.

Second: Spring Valley Farm, \$3,885.

Third: Real estate, San Francisco, \$8,054.

Fourth: Clay Street lot, 1865, \$2,057; making a total addition of \$16,926, with a deduction of the amount received from the sale of the Islais lands referred to on page 271 of Wenzelberger's Exhibit 101, \$5,056, leaving a net addition of \$11,870, which, when added to the previously stated sum of \$3,354,011.39, makes the total which we have assumed as our base, \$3,365,881.39.

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We then analyzed the data given by Reynolds concerning the contributions of stockholders, which was submitted in his Exhibit 104, page 7, of the rating cases 1903 to 1905, finding that the contributions to the San Francisco City Waterworks amounted to \$790,281.45, and to the Spring Valley Waterworks, \$1,546,544.51, making the actual contributions to the consolidation for 60,000 shares, to March 1, 1865, \$2,336,825.96. In addition to these sums Reynolds, in his testimony, pages 4835-36, gives data from which we estimated the amount of the earnings which went back into the plant in addition to the contributions of the stockholders; first, for the San Francisco City Waterworks the sum of \$473,645.03, as appears on page 4 of this memorandum near the foot of the page, and for the Spring Valley Waterworks, \$243,210.68. Adding these sums to the sums contributed by the stockholders, the combined sum thus found amounts to \$3,053,681.67. It is to be borne in mind that during this period the stockholders received no dividends.

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We then endeavored to make an estimate or analyze the figures available with reference to the construction cost of the work, regardless of the defaulted interest, and to separate, if possible, the overhead costs. From Wenzelberger's Exhibit 101, pages 1 to 16, with deductions for items covering overhead and interest-during-construction charges, we found, as appears near the top of page 6 of this memorandum, \$1,299,694.95. Wenzelberger gives no information concerning the construction cost of the San Francisco City Waterworks; therefore, that we had to obtain through Reynolds, and through an estimate made by ourselves, of the construction cost of the items of property, so far as we had them, which existed at that time. From the Reynolds testimony in the 1903 to 1905 rate case, pages 4822-23, we found, as appears near the top of page 7 of this memorandum, after deducting the overhead charges referred to by him, a construction account of \$826,060.27; that is, after deducting for overhead and interest, attor-

ney's fee, exchange, and some other items, \$146,055.27, and excluding salaries that may have been included in the construction account as indicated by the minutes of the company, \$36,000 for a period of seven years, making \$252,000; after making those deductions we found a net construction balance of \$826,060.27 for the San Francisco City Waterworks construction cost, excluding overhead and interest-during-construction.

In order to check that construction cost we attempted to make an estimate ourselves of the cost, using the data which we had concerning original cost, and making an estimate where we had not it, and in this way we built up the estimate, the total of which is shown on page 10 of this memorandum, which amounts to \$686,000, excluding the overhead and interest-during-construction cost, which is comparable, so far as it may be complete, with the item of \$826,060.27 referred to on page 7 as being Reynolds' figures after making the deduction stated.

Summing up these construction costs then, on page 11 of this summary you will see the items, first, Spring Valley Waterworks, as deduced from Wenzelberger's figures, \$1,299,694.95; San Francisco City Waterworks, from our own estimate \$686,000, Reynolds' figures having been \$826,060.27, to which has been added here 50% allowance to cover overhead and interest-during-construction costs, the rate during this period having varied according to Reynolds, from 18% to 30%. That is the interest rate alone without the overhead, making a total addition of \$993,000, which is comparable with the deductions made to cover these items so far as we could determine them from the testimony of Wenzelberger and Reynolds, as appears a little further down on the page, \$398,055.27, for the San Francisco City Waterworks from the Reynolds data, including the items for the stated salaries, and \$466,186.44, covering the overhead and interest on the Spring Valley Waterworks, as deduced from Wenzelberger's accounts, making a total of \$864,241.71, covering overhead and interest allowance, which is comparable with the figure \$993,000 referred to above. The difference between those two, which amounts to \$129,000 is not very different from the difference between our estimate of the construction cost of the San Francisco City Waterworks and Reynolds' figure.

Questioned by Mr. Searls.

I don't think I said an estimated overhead of 20% and interest at 30%; I said an allowance of 50% to cover overhead and interest costs, the interest rate having varied from 18% to 30%, as stated by Reynolds during that time.

The final result by adding these three sums together gives the combined cost, including overhead and interest-during-construction charges of \$2,979,000, to which I added 15% development expense, or \$447,000, making a total of \$3,426,000. Approximately the same result would be reached if you added to the construction cost of the

Spring Valley Waterworks \$1,299,694.95, the overhead and interest-during-construction amounts deducted, which amounted to \$864,241.71, and for the San Francisco Waterworks, Reynolds' figures, of \$826,060.27, the total of those three sums being \$2,989,996.93, which is comparable with my figure of \$2,979,000. There is only about \$11,000 difference. Then add 15% development expense, it would give substantially the same total which I have shown here, the other figure being \$3,426,000.

DIRECT EXAMINATION BY MR. GREENE.

8737 We next analyzed the matter in accordance with Exhibit 12-CC. Applying to the amount paid in by the stockholders the rates corresponding to the assumed fair cost of money to the corporation, shown in column 18, and varying from 18% in the year 1858 to 13.1% in the year 1865. That covers the period of years for which Reynolds said the rates of interest varied from 18% to 30%. Applying that rate of return to the contributions by the stockholders, and adding each year the deficit in return, thus getting the capital sum shown in column 23, we find a total for the year 1865 of \$3,734,796, and for the year ending December 31, 1864, \$3,404,776, the time of consolidation of these two properties having been June 1, 1865. That method of computation seems to check up fairly well with the other.

The actual stockholders contributions shown in Table 12-BB does not check exactly in segregation with Reynolds' figures, although the totals are, I believe, substantially the same, the difference coming from the fact that there was a repayment of stock, I believe a deduction, which Reynolds deducted at the end of the period, and which we have segregated between the several years when it should apply. The total amount corresponds with his figures substantially.

8738 In the light of the above data, I conclude that the combined original cost of lands and structures of the San Francisco City Waterworks and the Spring Valley Waterworks, which were consolidated in June, 1865, excluding overhead and interest-during-construction costs, amounts to the approximate sum of \$1,985,000 or in round numbers, \$2,000,000. That includes the Merced water rights, as the water rights went with the lands. And that the original cost of these combined properties as of December 31, 1865, including development expense, or in other words, the deficit in return, in as much as the stockholders received no dividends during those years, was \$3,366,000.

That includes, also, overhead and interest-during-construction; it includes the basic cost, overhead and interest-during-construction charges, and an allowance for deficit in fair return, as measured by rates of return, commensurate with the fair cost of money to these plants. I believe that the total figures representing the cost of these works, as submitted by Wenzelberger and Reynolds in evidence in the

rating suit of 1903 to 1905 seems to me fairly justified and reasonable in the light of such information as we have been able to gather concerning the property covered by this sum, and the work done.

Questioned by Master.

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The sum of \$12,000,000, as indicated by the two Tables, 12-BB and 12-CC is the difference between the investment of the stockholders and bond holders, and that investment increased by the deficiency from year to year, or decreased by the excess in earnings over a fair rate of return to the end of that period of time, and it does not take into account the earnings which went back into the property, which would have otherwise been paid in dividends to stockholders. So that when you use the term "development expense", you are using it in a little different way than that in which we have ordinarily used it. That development expense is a little different thing than this computation would imply.

In stating yesterday that considering the operation of compound interest, and the chances of error in computation as to the earlier years, I did not wish to be understood as not laying much stress on this added factor over the \$28,500,000; I had reference to development expense computations which will follow. It did seem to me that this computation had more or less significance; that it should be taken absolutely, of course,—no,—because the uncertainties with regard to all these original cost estimates are agreed, and the effect of compounding the interest is very substantial. I think this computation has greater significance than all the later ones upon development expense based upon original cost, which shows still greater variations than \$12,000,000, and which indicates very clearly the tremendous compounding effect of the interest. It has seemed to me that the reproduction method of determining development expense was much more significant in this case than attempting to determine it from original cost methods. It results in very much lower figures, and much more credible figures, it seems to me.

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I think this computation has some value, but I don't think it has nearly as much value as the reproduction cost estimate. I think it has more value than the determination of development expense from original cost. This computation attempts to deal essentially with what happened to the bondholders and stockholders from the point of view of what they paid for their shares. The other computations are based upon the cost of the structures, which is a somewhat different thing. We attempted to make this segregation concerning the predecessor companies, so that we might have a starting point for the construction costs; Wenzelberger's and Reynolds' figures, giving us merely the total of the construction and overhead and interest losses during that time, it being presumed that those were taken into consideration in the consolidation, and as I have shown you, the original cost seems to have

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been approximately \$2,000,000 without the overhead allowances, as against the total entry of \$3,355,000.

(Amended exhibit, Pleasanton Ranch Houses, comparison of reproduction cost estimates, 1913, introduced and marked "Plaintiff's "Exhibit 168-A.")

Sharon

Witness: JOHN J. SHARON for Plaintiff.

8742

DIRECT EXAMINATION BY MR. OLNEY.

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The tabulation which I have here, designated as lands and structures out of use and never used, Spring Valley Water Co., as of December 31, 1913, sets forth the lands and structures in two classifications; that is, lands and structures which were once used, and which are now out of use, and lands and structures which were never used. The foundation for the periods at which the properties went out of use was taken by me from the records in the 1903-04 case, and was checked up as to the accuracies of the dates by me from the minutes of the company, the Municipal Reports, and from the water journals. Costs that I have taken here are the costs that are shown in the exhibits of Reynolds and Wenzelberger; for the properties that went out of use prior to 1904, and for the properties that have been put into the system, and have gone out of use since 1904, the costs were taken from the records of the company. For the properties which were constructed prior to 1904, and the cost of which was shown by Wenzelberger and Reynolds, but which went out of use since 1904, I used their cost.

I had to make some estimates as to the cost of the cast-iron pipe in the city system that went out of use; I did that on the basis of taking the record of the number of tons of pipe that was taken up each year, and applied a rate per ton which checked very closely with the records which were shown by Mr. Wenzelberger in his Exhibit 101 for pipe laid as of certain dates; for example, in the trial balance of June 1, 1865, Mr. Wenzelberger shows that the cost of pipe, and of laying the pipe in the system, was a certain amount of money, which, divided by the number of tons of which I had a record, showed the actual cost to be about \$90 per ton. The records in the general construction from 1866 to about 1878 showed certain amounts of money having been spent on the pipe in the system, which, divided by the number of tons of which I had a record, showed other rates. In putting these pipe out of use, I allowed a lag in the earlier years in the price of from 5 to 10 years, and later on I stretched that lag over to 20 years, so that pipe that was taken out in 1913 was taken out at the price of about 1890, or thereabouts.

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I find on page 13 of this tabulation that the property out of use

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and never used, lands and structures, original cost, excluding overhead and interest-during-construction, as of December 31, 1913, is as follows: Lands once used and now out of use, shown in column 1, \$233,657.

Structures once used and now out of use, shown in column 2, \$2,617,639; lands that have never been used, \$1,227,190; structures that have never been used, \$338,278. The total of the columns 1, 2, 3 and 4, shown in columns 5, \$4,416,764. In columns 6, 7, 8 and 9, are shown interest-during-construction, which was 6 months interest during construction, at the fair cost of money rate at the time of the original construction of these properties. I assumed Mr. Metcalf's rate there, and that excludes overhead. The grand total shown in column 11 of the properties, including this interest-during-construction, is \$4,630,529.

This is an analysis of investment in lands and structures, without reference to whether it is now owned or not.

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Mr. Metcalf: This includes the properties that Mr. Hazen stated were out of use. I said yesterday that we should have to modify "Exhibit B" and "B-2" to accord with Mr. Hazen's assumptions as to property out of use, and it is in accordance with this table that those exhibits would be modified so that the figures therein used will be these here. These are somewhat more than those. I stated yesterday that I thought the difference was about \$150,000 on the structures. I am wrong about that; it is on the lands largely; the difference is probably about \$150,000, perhaps somewhat more, on account of the interest, but that is on the lands and structures, chiefly lands.

(Tabulation of lands and structures out of use and never used of Spring Valley Water Co., of December 31, 1913, introduced and marked "Plaintiff's Exhibit 171".)

Witness: GEORGE GRAY ANDERSON for Plaintiff.

Anderson

DIRECT EXAMINATION BY MR. GREENE.

8746

I am 57 years of age, reside in Los Angeles, and am a consulting civil engineer by occupation. I have been engaged in my profession since the latter part of 1874.

I was educated at Robert Gordon's College, and the University of Aberdeen, in Aberdeen, Scotland. After leaving the University I served an apprenticeship of 5 years with a firm of engineers at Aberdeen in general practice, mostly in waterworks, sewerage and drainage. In 1879 I went to London, with the London & North-western Railway Company for a little less than a year. In 1880 I came to Denver, Colorado, as Assistant Engineer on the Northern Colorado Irrigation Company Canal, usually known as the High Line Canal, immediately adjoining Denver, and was associated with that

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company in various capacities, first as assistant engineer, and in 1883, as Chief Engineer and General Superintendent of all the operation and maintenance of the canal system. With that company there were three other canal systems incorporated, the Larrimore and Well Canal, which irrigates about 50,000 acres in the Cache La Poudre Valley; with the Greeley and Loveland Irrigation Canal, which irrigates about 20,000 acres, also adjacent to Greeley, and taking its water supply from a different stream, the Big Thompson River; and the Platte Valley Canal, which takes its supply from the Platte River about 25 miles north of Denver. The latter canal was constructed under my supervision as chief engineer. These four systems were under my general supervision as superintendent and engineer from 1883 to 1890.

In 1890 I entered general practice as an engineer, and was for some time in partnership with D. W. Campbell, and engaged mostly in irrigation work, and water supply work for domestic purposes. In that time I did a great deal of work in irrigation construction, some in Colorado, in Idaho, New Mexico, and some little in Arizona. In about 1893 or 1894 I constructed what is called Lake Loveland, one of the first of the large reservoirs constructed for storage and irrigation purposes. That is about 55 miles northwest of Denver, and was in connection with the Greeley and Loveland Canal. I also built, during that time, the branch from the Platte Valley Canal, on the Platte River, northeasterly from Denver, and other reservoirs and irrigation works.

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About 1897 I went to Canada as Chief and Consulting Engineer for a very large system in Southern Alberta, originally constructed by the Alberta Railway & Irrigation Co., covering about 200,000 acres of land; that is now incorporated in what is generally known as the Canadian Pacific Railway Irrigation System. The greater part of my time was spent in Canada until about 1905, although I always retained my office and my home in Denver. During that time I made an examination and investigation extending over a great period of time, and made a report upon the Canada Pacific Irrigation System. That was prior to the initiation of the Canadian Pacific Railway Co. At that time, also, I was retained as consulting engineer by the Government of Canada in connection with the difficulties and disputes arising out of the treatment of the boundary waters which were subsequently made a matter of treaty,—in 1909 I believe. I returned to Denver in 1905 and again engaged in general practice.

In 1906 I constructed the new waterworks, a gravity system, for the town of Greeley, and consulted in connection with the construction of waterworks at Grand Junction, at Trinidad, and Pueblo, and at other towns in Colorado, and—outside of construction—largely in connection with water supply and water rights, and in the controversies arising out of them in that state. When the town

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of Greeley constructed its new system of waterworks, they had to find a new water supply, as they had moved the source of their water from 40 miles upstream; the negotiations growing out of that—in securing the water right which they now own, and utilize for their purpose solely—was very largely conducted by me. I also had some relation with the town of Grand Junction in securing their water rights in what they call Kannah Creek, they, at the same time changing their point of diversion.

About the same period I was engaged in the construction of a large number of reservoirs for irrigation purposes, the Clear Creek Reservoir, near Granite, for the Otero Irrigation District; the Schaefer Reservoir, near Canyon City; the Sanchez Reservoir, in San Luis Valley, for the Costilla Estate Development Co., and in that connection I supervised the construction of an extensive irrigation system on the Costilla Estate, in which work I am still associated. I was also during that period consulting engineer for a number of irrigation enterprises in the northwestern portion of Colorado, in Routt County, and elsewhere.

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About the latter part of 1907 I made a very thorough investigation of the water rights and water supply of the Denver Union Water Co., then being submitted to appraisal by a board of engineers, with a probable purchase by the City in view. Mr. D. G. Thomas was Chief Engineer at that time. Since 1896 I have been practically the consulting engineer of the Denver Union Water Co. in all matters affecting their water supply and water rights, in all litigation and controversies affecting those questions which have been somewhat numerous and almost continuous.

In 1913-14 I was associated with Mr. Metcalf in the valuation of the properties of the Denver Union Water Co., in the hearing before Special Master Chinn in an appraisal of the property, my special duty being the investigation and valuation of the water rights of that company.

About 1912 I came to California, and paid a good deal of attention to the investigation of the properties of the Spring Valley Water Co., especially in regard to the rights for water which they owned and controlled. The following year I made a similar investigation of water properties of the Pacific Gas & Electric Co. I may add that in general in my practice in Colorado in all these years I have given a great deal of special attention to discussions and controversies in court and outside, of those matters affecting waters, and water supplies, and water rights. That includes the acquisition, and the cost of acquisition, and the valuation. A great deal of my examination has been of waterworks properties in Colorado and elsewhere, irrigation works and waterworks for banking interests, or institutions extending credits and loaning money to such companies.

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I am a member of the American Society of Civil Engineers, of the Institute of Civil Engineers of England, of the Canadian Society of Civil Engineers, and other organizations of the kind.

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I commenced an examination of the properties of the Spring Valley Water Co., and particularly of its water rights, in 1912. I went over the country which they serve, and from which they derived their water supply, and made myself familiar with the conditions, physical and otherwise, and with all matters affecting the water rights and the water supply. That I have continued at various times up until the present. In 1914 I paid some particular attention to the same subject, and in the last year, also, some considerable time and attention was occupied in consideration of those matters. In 1912, I should say that I gave fully 6 months consideration to it; in 1914 probably 3 months, and in this past year probably 4 or 5 months.

In connection with that subject I have referred to a consideration of practically all of the water properties of the Pacific Gas & Electric Co., and in connection with that, but much more largely in connection with the Spring Valley Water Co.'s properties, I made some detail investigation of water rights and water right values in the southern part of California, and other parts of the State. As a result of my investigation and examination I have reached a determination as to the value of the water rights of the Spring Valley Water Co. in December, 1913, which determination I have reduced to writing.

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The following is a memorandum on the valuation of the water rights of the Spring Valley Water Co., dated March 20, 1916:

The water rights owned by the Spring Valley Water Company, the value of which is to be determined, as of date December 31, 1913, consist of the exclusive right of diversion of waters, at the following places:

- (1) On Alameda Creek, at the Sunol Dam.
- (2) On San Mateo Creek at the Lower Crystal Springs Dam, and
- (3) At the outlet of Lake Merced.

These rights were acquired by adverse use and by the purchase of the riparian rights from lands below the several points of diversion and riparian to the various streams, which are the sources of supply.

The water rights herein considered consist of the exclusive right to divert and use elsewhere.

There are no water rights on any of these streams prior in time to those of the Spring Valley Water Company, herein considered.

The total quantity of water diverted from those sources in the years from 1908 to 1914 inclusive, and applied to domestic purposes in the City of San Francisco, is shown on Exhibit 12-U, as follows:

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Year.	M.G.D.
1907	30.7
1908	31.6
1909	34.1
1910	35.6
1911	37.5
1912	39.2
1913	39.7
1914	39.4
Average	35.9
1915	42.6

8753

The diversions from the separate systems in these years were as follows:

	1907	1908	1909	1910	1911	1912	1913	1914	Average	1915
Alameda Creek.....	16.0	13.7	13.5	14.5	15.6	13.2	13.1	18.3	14.7	20.3
Peninsula Sources.....	11.3	15.4	17.5	16.4	18.8	23.6	21.7	17.7	17.8	18.3
Lake Merced.....	3.4	2.5	3.1	4.7	3.1	2.4	4.9	3.4	3.4	4.0
Total m. g. d.....	30.7	31.6	34.1	35.6	37.5	39.2	39.7	39.4	35.9	42.6

* * * *

The diversions from the Peninsula sources and Lake Merced are exclusively surface reservoir supplies, while that from Alameda Creek depends upon the direct flow of the stream, regulated by the underground reservoirs at Sunol and Pleasanton.

* * * *

The maximum sustained monthly diversions at Sunol are as follows in million gallons daily, during the months stated:

1907	1908	1909	1910	1911	1912	1913	1914	1915
May,	Apr.	May	March	Nov. &	Feb.	Apr.	Feb.	May
June				Dec.				
& Aug.								
16.9	16.9	16.9	17	17	16.9	20.1	21.4	21.3

with an average maximum monthly diversion up to February, 1914, of 17.9 m.g.d.

The capacity of the pipe system at Alameda Creek is 21 m.g.d. and the company has withdrawn that much in 1913 and 1914. The safe yield of these water rights is at least, that quantity.

* * * *

Over a long period of years the Peninsula sources are capable of supplying a sustained average diversion of 19 m.g.d. At December 31, 1914, there was in storage in the three reservoirs, Pilarcitos, San Andreas and Crystal Springs, a total quantity of 13.376 m.g. which

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would be equivalent to an additional sustained draft of 4.6 m.g.d. for the period under consideration. Added to the quantity of 17.8 m.g.d., shown to be the average daily quantity delivered, there would be a total quantity of 22.4 m.g.d. as the average yield of the Peninsula rights.

* * * *

There was in storage at Lake Merced, at the same date, 1212 m.g. which would be equivalent to an additional sustained draft of practically .42 m.g.d. for the period, giving a total average yield of 3.82 m.g.d.

* * * *

After careful investigation and full consideration of various methods by which may be determined, it is my judgment that these water rights were, on December 31, 1913, of the total value as follows:

Alameda Creek Rights.....	\$2,100,000
Peninsula Sources	1,900,000
Lake Merced	340,000
	<hr/>
	\$4,340,000

From the total yield deduction has to be made of various obligations in a quantity of approximately 1 m.g.d. or a value of \$100,000, leaving a total of \$4,240,000 as representing the value of the water rights devoted to the supply of the City of San Francisco, in December, 1913.

8755 Considering that, on Alameda Creek, prior to 1913, the full yield has not been developed and put into service, but was utilized to the extent of 17 m.g.d., the value of the water rights, prior to 1913, in my judgment, was \$3,940,000.

PRINCIPLE OF VALUATION.

The value of these water rights is to be determined separate from and in addition to the value of all elements that may contribute to their assemblage or that may be employed in conveying their product from source to point of consumption.

The true measure of the value of water rights is the present market value of similar water rights, used for the same purpose in the same locality.

Where there are frequent exchanges of such rights, the selling prices would determine the market value in that locality. In this instance, as the Spring Valley Water Co. and other corporations own substantially all of the water rights in this region there have been no sales of importance in recent years. As a consequence, market values must be otherwise determined.

INVESTIGATIONS MADE AND MATTERS CONSIDERED IN ARRIVING AT VALUATION:

Investigation has been made of:

(a) The values of water rights, used for irrigation purposes in other parts of the state, chiefly in Southern California and the Santa Clara Valley.

(b) Of the increment in land value in 1913 due to the attachment of such water rights for irrigation purposes in the districts in which they are located, and consideration taken of the relative increment that would occur in the districts adjacent to the source of supply, of the water rights under review, had these rights been devoted to irrigation purposes.

(c) Of the original cost of acquiring these water rights on the streams on which these particular rights are located, below the point of diversion, so far as information of that original cost is now obtainable.

(d) Of the assessed values of these rights and of the lands from which they were acquired in 1913. 8756

(e) Of the reproduction cost of these rights at the present time.

From consideration of these various features, conclusions were formed of the present value of the water rights in question, as given above.

WATER RIGHT VALUES IN SOUTHERN CALIFORNIA.

In determining the value of a particular tract of real estate, consideration is given to the value of neighboring tracts, in which elements affecting value are similar to those in the particular tract under appraisal. Similarly, the value of water rights may be established by consideration of the value of water rights in adjacent localities, where the elements affecting value are similar to those existing in connection with the water rights under review. These are principally that the available supply is limited, and that there is demand for the full amount of that supply.

By reason of the conditions existing in the locality immediately adjacent to that in which the particular water rights under review are situated, which have been noted previously, it becomes necessary to go farther afield and to have recourse to consideration of the value of water rights employed for purposes other than those for which these rights are now used.

These other purposes—irrigation—are next in rank in value and necessity to domestic purposes. For domestic purposes, water rights possess the value for irrigation purposes at least, and actually a greater value. For domestic purposes, water rights must rank in efficiency of supply with the first rights for irrigation, assuring continuity and uniformity of supply.

8757

To reach an approximately comparable basis, the water rights used for irrigation purposes that should be considered should be located in districts where the available supply is limited, where there is demand for the full volume of that supply, and where, for irrigation purposes, the water supply has been carried to its highest and most valuable development, as it has been in this particular region for domestic purposes.

The nearest adjacent district in which water is used for irrigation purposes, affording the closest comparable conditions, lies in Southern California. In that territory the water supply is limited in quantity; there is active demand for its full volume and for irrigation purposes it has been carried to its highest and most valuable development. The climatic conditions are more nearly similar than elsewhere throughout the State, the populations dependent on water supply are relatively comparable, and the operations of the systems distributing the water supply are in the hands of mutual companies, from whose financial reports and records of sales reliable information of values can be obtained, and in some degree, knowledge of the efficiency of the supply itself in relation to the basis of water right value.

In that section, water right values are stated in the unit of a miner's inch (on the basis of 77.4 miner's inches per million gallons) developed from the value of the shares of stock in the various mutual companies.

In arriving at the values shown on the accompanying table, Exhibit A, prepared after personal investigation of the various water systems mentioned, care was exercised in the analysis of individual cases to limit the values of these water rights to terms of right to divert and use only, excluding all interests in attached lands or ditch systems or any assets other than actual rights of diversion and use.

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The table, Exhibit A, shows the resulting values in terms of miner's inches and the equivalent in terms of million gallons daily.

EXHIBIT "A"
VALUE OF WATER RIGHTS IN SOUTHERN CALIFORNIA

Company	Location	Value Per Miner's Inch	Value Per M. G. D.
Duarte Mutual	San Gabriel	\$2,000.00	\$154,800.00
Covina	San Gabriel	1,524.00	117,957.00
Del Monte	Pomona	1,269.00	98,220.00
Canyon Water	Pomona	1,350.00	104,490.00
San Antonio	Ontario	1,870.00	144,738.00
Bear Valley	Redlands	1,166.00	90,248.00
Mill Creek	Redlands	1,200.00	92,880.00
Gage Canal	Riverside	1,000.00	77,400.00
Temescal	Corona	1,250.00	96,750.00
Average		\$1,403.00	\$108,609.00

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Questioned by Mr. Searls.

That was personal investigation. The values I obtained from the records of the various companies. I was given access to those records.

Sheet 2 of the same exhibit goes into further detail of the same companies.

EXHIBIT "A"

Sheet 2

VALUE OF WATER RIGHTS IN SOUTHERN CALIFORNIA

Company	Location	Shares per		Share	Gross Value		Structure		Net Value		Value per M. G. D.
		Miner's	Inch		Miner's	Inch	Miner's	Inch	Per Miner's	Inch	
Duarte Mutual	San Gabriel	8		\$300	\$2,400		\$400		\$2,000		\$154,800
Covina	San Gabriel	19		80	1,520		4		1,524		117,957
Del Monte	Pomona	100		14	1,400		131		1,269		98,220
Canyon Water	Pomona	100		15	1,500		150		1,350		104,490
San Antonio	Ontario	6		325	1,950		80		1,870		144,738
Bear Valley	Redlands	54		23	1,242		76		1,166		90,248
Mill Creek	Redlands	..		....	....		....		1,200		92,880
Gage Canal	Riverside	..		....	....		....		1,000		77,400
Temescal	Corona	10		125	1,250		....		1,250		96,750
Average										\$1,403	\$108,609

8759

Questioned by Mr. Searls.

My valuation of the structures was based upon the record cost from the company's reports. In no case did I attempt to put any value on the structures, except in one item, the Duarte Mutual, upon which I could get no information as to the structural value, I did place \$50 per share, or \$400 per inch. When I say "record cost", I mean information given me by the officers of the Mutual Water Co.

8760 These are not selected cases but represent all of the mutual ditch companies of whose operations and resulting values reliable data were found.

Data regarding two other companies, not personally known to the writer, have recently been supplied. In one of these, the Lugonia Company, at Redlands, the value per miner's inch is stated at \$1600. In the other, the Riverside, at \$750. The addition of these to the table in "Exhibit A" does not materially alter the resulting average, which would be \$1362 per miner's inch, and \$105,419 per million gallons daily.

Higher values in a few isolated cases were found, as for instance, at Montecito, where \$4,000 per miner's inch, or \$309,600 per million gallons, was paid for a small quantity of water. That was used for irrigation and domestic purposes on suburban estates in a highly desirable and attractive section. While it is indicative of increasing value, the supply was limited and in that section, considerations other than strictly economic value probably governed, and this particular transaction is not regarded as applicable in the present consideration.

It should be noted of the Mill Creek case that the only transaction at the time of inquiry had been consummated on the basis of \$1,710 per miner's inch. Negotiations were pending for the purchase of an exactly similar right, for which the owner asked \$1400 and the buyer offered \$1200 per miner's inch. The lower value has been used in the table.

While the average value has been set out, the comparison, when applied to these water rights of the Spring Valley Water Company should be with the water rights that produce an equally reliable and uniform supply, a condition which did not exist in several of the ditches quoted, as the reports show a lack of full efficiency of water service.

8761 In 1909 the actual water service on the Covina ditch gave 1 miner's inch to 27 acres, while the value of the miner's inch has been computed on its service to 8 acres, the stipulated service per share.

While no quantities of water delivery are available, the service on the Del Monte ditch is also below full efficiency, as indicated by the annual report.

The supply of the Canyon Water Company has had to be rein-

forced by wells, and the reports show that in the period 1901-1913, inclusive, a service of 93.25 per cent only was secured.

In 1909, the water actually delivered under the Temescal Water Company was 87 $\frac{3}{4}$ per cent of full supply.

In concluding that the average value of water for irrigation purposes in Southern California is \$108,609 per million gallons daily, a conservative statement is made in view of the surrounding facts.

That value attaches to the service for the particular purpose which entails delivery of water during the irrigation season, or ordinarily 240 days per annum, rarely does the season extend to 270 days. And the service during the limited period does not, in all cases, yield full efficiency on the water right.

Due weight must be given to these two elements as affecting value of such water rights as those of the Spring Valley Water Company, used for domestic purposes; first, the lack of full efficiency during the season of use, and second, the comparative length of the season of use.

In the first consideration, a water supply for irrigation purposes may be irregular and fluctuating without materially diminishing the product on which its resultant value depends.

For domestic purposes, a water supply must be constant and uniform. A reduction of available supply below the level of the demand may be fraught with serious consequences.

8762

The yield of the water rights of the Spring Valley Water Company, to which less than the average value of these Southern California water rights has been applied, is stated in the average amount which they continuously and fully yield. The elements of regularity and full efficiency in the first consideration enhance the value of domestic rights above irrigation purposes and justify the application of the value of irrigation rights supplying full volume continuously, as in the case of the San Antonio Company, in place of the average value.

In the second consideration, the water rights of the Spring Valley Water Company are capable of furnishing the continuous supply at the uniform rate shown in the statement of yield, for 365 days in the year.

The value of the service for irrigation purposes in Southern California is based upon a period of 240, or at the most, 270 days. It might be that the source of supply could not continue to furnish the full volume for an additional 95 to 125 days. If it could, and if service was not required on the lands served for 240 or 270 days, it could be conserved by storage and made capable of rendering service to an additional area, proportionate to the yield for the additional 95 to 125 days, at the same rate of return as now realized.

That condition implies that water rights used for domestic or other purposes, capable of yielding full and continuous service for

365 days, may have an additional value of from 30 to 50 per cent over water rights affording such service for 240 to 270 days.

8762½ WATER RIGHT VALUES IN SANTA CLARA VALLEY:

Reliable information on the value of water rights for irrigation purposes in Santa Clara Valley is distinctly limited. The writer made personal investigations in 1912 and caused inquiry to be made on the subject, the data being referred to herein later. Some confirmatory information is contained in two reports (158 and 254) of the office of Experiment Stations, U. S. Department of Agriculture, published in 1904 and 1912 respectively. In neither of these reports has attention been other than casually directed to values, but in the former, details of pumping costs are given, and references to some gravity ditches are made, from which approximate values may be developed.

8763 PUMPING PLANTS:

In 16 cases investigated in 1912 under my direction, the price paid for the delivery of one thousand gallons ranged from 1.3 to 5 cents, with one instance where 8 1/3 cents was paid, with an average of 3.65 cents per thousand gallons.

In one case, it cost \$510 to irrigate 30 acres of land, or \$17 per acre, the net price in this instance ranging from 5 to 8.33 cents per thousand gallons, on the basis of quantity supplied per hour.

On the average rate of 3.65 cents per thousand gallons, there would be a gross rental of \$36.50 per million gallons daily, or \$13,322.50 per annum. Capitalized at 6 per cent per annum, there is a value of \$222,042 per million gallons daily.

In Bulletin 158, already referred to, the average rental rate, "for 20 orchards is given as \$1.55 per hour for 1.44 cubic feet per "second delivered, or at the rate of \$13 per acre feet." That, at 6 per cent, would capitalize a value of \$242,786 per million gallons daily.

The average cost to the owners of 60 pumping plants in the same year was \$4.38 per acre foot, which included the "cost of fuel, attendance, and slight repairs", but did not include any of the fixed charges.

These fixed charges are estimated to average fully 13 per cent in the Bulletin, to include interest on investment in plant, insurance, taxes and depreciation.

It is estimated in the Bulletin that the cost of plant to irrigate 50 acres would be \$2,000 or \$40 per acre. In 1904, an average of 1.13 acre feet per acre was applied, so that installation cost averaged \$35.40 per acre foot, on which 13 per cent would be \$4.60.

Added to the cost of operation, \$4.38 per acre foot, there is a total of \$8.98 per acre foot, which is equivalent to a cost of \$10,062.54

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

per million gallons daily, and that capitalized at 6 per cent gives a value of \$167,709. 8764

In 1904, Mr. J. N. LeConte found the average cost of operation of 6 pumping plants, where gasoline was used, to be \$4.95 per acre foot compared with \$4.38 as given above, and of \$2.18 per acre foot, for cost of fuel only, in 3 steam plants. In neither of these groups was the installation cost interest on same, taxes and other charges considered, nor in the steam plants, the cost of attendance or of any item save fuel.

In Bulletin, 254, for 1912, only general conclusions are given of the average cost of operating, with no details of overhead expenses, these operation costs ranging from \$4.92 to \$8.33 per acre foot, and the notation is made that "many orchardists do not have their own "pumping plants but purchase pumped water, sometimes at a cost "of as much as \$20 per acre foot."

GRAVITY DITCHES:

It is concluded that these reports give information on all of the gravity ditches in the Santa Clara Valley.

In two, out of five reported on, and out of three giving any basis for developing values, the statement is made that water was sold to outsiders, after supplying the needs of stockholders, at the prices quoted, from which the water right value has been developed.

As the period during which water was carried by these ditches ranged 56 to 115 days only in 1904, and from 2 to 58 days in 1912, with the average discharge less than one-half the maximum discharge, which may be also the carrying capacities, it is a reasonable conclusion that the outsiders did not secure a reliable supply, and that water right values developed from rentals paid them, and from which commercial return was secured, are not likely to indicate the real value of adequate service, or to form a just comparison to water rights furnishing full, continuous service. 8765

The values developed from gravity ditches range from \$31,442 to \$67,724 per m.g.d. for service of surplus waters, over periods of 115 days maximum, one-third of the period during which the water rights of the Spring Valley Water Company perform full, continuous service.

From pumping, the values range from \$167,709 to \$242,786 per m.g.d. The period of service is not stated, and while it is probably not continuous for the whole year, it may well be that the supply would be sufficient to provide such continuous service, if so desired.

It is the conclusion that value would be more closely ascertained from the results of the pumping plants than from the gravity ditches, the latter giving only limited service and that confined largely to the winter season.

EXHIBIT "B"

VALUE OF WATER RIGHTS IN SANTA CLARA VALLEY.

Pumping Plants:

Average rental, 16 cases, in 1912.....	\$222,042
Average of 60 plants, 1904, to owner.....	\$167,709
Average rental in 1904.....	242,786

Gravity Ditches:

	1904	1912
Statler Ditch	\$31,442	\$37,702
Sorosis-Calkins Ditch	46,884	37,702
Pioneer Ditch.....		
Kirk Ditch		
Orchard Irrigating Co.		67,724
Mason Ditch		

8766

The rates of the Pioneer Ditch are given but there is no information on the quantities of water.

WATER RIGHT VALUES AT LOS GATOS:

The record of a number of purchases of water rights in the vicinity of Los Gatos, from 1887 to 1914, has been examined by Mr. F. C. Herrmann, who has been associated with the writer in this examination of water right values. Mr. Herrmann will explain the details of these purchases; they are introduced here as a comparison with the values found in other districts.

	Cost per Miner's Inch.	Cost per M.G.D.
Saratoga System, 1887.....	\$ 1,143	\$ 88,500
Almond Grove Well, 1891.....	3,230	250,000
Hill Well, 1898.....	855	66,200
Roberts Springs, 1898.....	723	56,000
Coult Right, 1914.....	12,920	1,000,000
Osburn Right, 1915.....	18,090	1,400,000
Average Value.....	\$ 6,160	\$ 476,783

The two last mentioned purchases were for small quantities of water, 2000 and 500 gallons per day, respectively. Omitting them, the average value is \$115,175 per million gallons daily.

INCREMENT IN LAND VALUE DUE TO ATTACHMENT OF
WATER RIGHT.

The average value of the miner's inch in Southern California has been shown to be \$1,403.

The average allotment of water service in that district is 8 acres per miner's inch. There is, thus, an enhanced land value of \$175 per

acre due to the water right. In other words, the land, with the aid of the water right, will have such increased production over what it would have without the water right, that it will yield a return upon an increased value of \$175 per acre.

A higher duty of water probably obtains in the Santa Clara Valley than in Southern California, that is to say, a smaller quantity of water is required to mature crops and the miner's inch will serve a greater area. There is more rainfall in the Santa Clara Valley than in the South; the comparison is that of semi-arid and arid conditions.

8767

While information on this feature is somewhat meager, a duty of 1 acre foot per acre would be adequate, under the conditions that would exist of a continuous regulated supply. The average duty under pumping plants in 1904 was 1.13 acre feet per acre, while that under the gravity ditches averaged 2.22 acre feet per acre, with one ditch showing over 3 acre feet. In three ditches reported on in 1912, the average duty was over 3 acre feet per acre, but of one ditch diverting 4.39 acre feet it is stated that only 1.50 acre feet was actually used in irrigation. In 7 cases in San Mateo county, the average duty is .37 acre foot per acre, with .8 acre foot as the maximum. It would not be unreasonable to expect an adequate service of 9 to 10 acres per miner's inch, including losses in transit, in Santa Clara Valley.

From these considerations, the application of the average Southern California water right value would mean an average enhanced acreage value of from \$140 to \$175 in the district in which the water rights under consideration are located.

The rental value of waters in the Santa Clara Valley will give some indication of the enhanced land value due to the application of water.

In 16 cases inquired into in 1912, the average rental was 3.65 cents per thousand gallons, equivalent to \$12 per acre foot. On the duty of 1 acre foot per acre, there would be an enhanced value of \$200 per acre. In one case, the rental was \$17 per acre, implying an enhanced value of \$283 per acre.

8768

In 1904, according to Bulletin 158, the cost to owners of pumping plants was \$10.16 per acre, and to renters of \$13 per acre foot, with an average duty of 1.13 acre foot per acre, showing a cost of \$14.69 per acre.

There is thus an enhanced value to owners of \$171 per acre and to renters of \$245 per acre.

In 1912, Bulletin 254 does not present the data in such form that reliable deductions can be made. The actual costs are stated to range from \$1.48 to \$10.75 per acre foot, with about one-half being from \$4.92 to \$8.33 per acre foot. The installation costs are not given, nor is the duty per acre. It is added that "many orchardists do not have

“their own pumping plants but purchase pumped water, sometimes at a cost of as much as \$20 per acre foot.”

Under the gravity ditches, from the information available, the enhancement in land value is smaller. The data on cost represents the rentals charged to outsiders after the needs of stockholders in the ditches are supplied. The service given is consequently for any excess water and for limited periods.

8769 In 1904, Bulletin 158, shows that under the gravity ditches, the average quantity of water used per acre was 2.22 acre feet. “In addition to supplying the needs of their respective stockholders,” the ditches “sold water to outsiders at an average price of \$2.10 per acre foot. If it is assumed that those who purchased water at “this rate used as much as the stockholders, the average cost to the “former would be \$4.66 per acre. It is reasonable to conclude, however, that the purchaser of water from a ditch company would use “somewhat less than one who owned an interest in the company. “This view is strengthened by the fact that during the year previous “the cost of water for winter irrigation on 130 orchards was \$2.50 “per acre. It is, therefore, probable that \$4.66 per acre approaches “the maximum cost of water for winter irrigation and that the average is considerably less.”

The capitalization of \$2.50 per acre means an enhanced value of \$41.65 per acre, and of \$4.66 per acre of \$77.64 per acre.

In 1912, the only reference, in Bulletin 254, to rental value from gravity ditches is “that the Santa Clara Valley Water Company sells “water at the rate of 50 cents per hour for 3 cubic feet per second “up to May 1, with a 50 per cent increase thereafter.” That means, practically, from \$2 to \$3 per acre foot, and, on the duty of 1 acre foot per acre only would give a capitalization of from \$33.33 to \$50 per acre.

The rental rates under the Pioneer Ditch are given for 1912, but not the quantities to which they are applied.

In summary, the analysis shows enhanced land values as follows:

From Pumping

	1904	1912
Owners	\$171 per acre	no data
Renters	245 per acre	\$200 per acre
		\$283 per acre maximum

From Gravity Ditches

	1904	1912
Average	\$42 per acre	\$33 per acre
Maximum	\$78 per acre	\$50 per acre

From investigation of comparative values of land, with and without water rights attached, in the Santa Clara Valley, it is found

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that the distinction is not so sharply defined as in districts where irrigation is entirely relied upon. Farming can be conducted without irrigation, and raw land without water supply has some element of residential value attached to it that cannot be attributed to any crop-producing ability.

8770

Raw land values range from \$100 to \$200 per acre in Santa Clara Valley. The higher price undoubtedly includes some residential value or is due to the hope or expectation of securing water or other means of increasing crop production.

With adequate water facilities added, and no other improvements, the average value is fairly stated at \$400 per acre.

There would thus be an average increment of \$250 per acre, from which the cost per acre of works for water supply would be deducted. These might average \$50 per acre, a conservative figure, higher than the average cost of the works on the system considered in Southern California, while Bulletin 158 gives the cost of pumping plants in the Santa Clara Valley as \$2,000 for 50 acres, or \$40 per acre.

There would thus be an average net difference of \$200 per acre, representing the value of the water right only.

On a duty of 1 acre foot per acre per annum, with addition of 20 per cent for losses in transit, the yield of 21 million gallons shown as the mean maximum sustained capacity of the pipe line diverting from Alameda Creek over the period 1907-1914 inclusive, would supply 19,472 acres, and the average yield from Alameda Creek of 14.7 million gallons daily would supply 13,600 acres.

8771

On the increment of \$200 per acre as the value of the water only, the Alameda Creek water rights are worth from \$2,720,000 to \$3,894,400.

On the increment of \$140 per acre, the result of applying a duty of 10 acres per miner's inch to the Southern California acreage value of \$1403 per miner's inch, the value of these water rights would be \$1,904,000 to \$3,320,520.

That, of course, is on the basis of the total annual yield while it may be claimed that only that portion of the yield obtained during the part of the year in which irrigation would be required, say six months, should be considered as applicable. That might apply to the valuation of these rights for irrigation purposes, and then only upon the assumption that one-half of the yield would be wasted, which would not occur.

8772

Conservation of the flow during the non-irrigation season would certainly be made, storage facilities for 7,000 to 8,000 acre feet would be readily secured in the territory to be irrigated.

The present consideration, however, is the value of these water rights applied as they now are, and on such conditions the total

yield must be considered, even if at prices secured for application to another and less valuable purpose.

On the basis of increment in land value, there would be a value of \$185,000 per million gallons daily, an enhancement of \$200 per acre, of \$129,500 per million gallons daily, enhancement of \$140 per acre and of \$92,500 per million gallons daily, an enhancement of \$100 per acre.

HISTORY OF ACQUISITION OF RIPARIAN RIGHTS:

ALAMEDA CREEK:

Diversion of water was first made from Alameda Creek by the Spring Valley Water Company at the Niles Dam in 1888. That diversion has since been continuously made, though the point of diversion of water for consumption in San Francisco was changed to the Sunol Dam in 1900.

8773

The rights in Alameda Creek were acquired by diversion and use, and by purchase of the rights of the Alameda Water Company in 1875, of the Washington and Murray Township Ditch Company about 1887, and of individual riparian rights below the point of diversion from the owners in the period from 1887 to 1910. The latter were mostly acquired in 1886-1890. The purchase from the Alameda Water Company included the old Vallejo Mill rights, which antedate all others on the Creek.

By continued use, the Spring Valley Water Company at present owns a water right on Alameda Creek, to the extent of 21 m.g.d. against all owners of riparian lands and lands with percolating waters below Niles.

PENINSULA SYSTEM:

The Spring Valley Water Company first utilized the waters of Pilarcitos Creek, by diversion at the Pilarcitos Dam in 1867 and at the Stone Dam in 1871.

This diversion involved the purchase of the riparian right of a grist mill at Spanishtown (now Half Moon Bay) in 1861.

The balance of the water rights on Pilarcitos Creek was acquired by continued and exclusive use over a long period of years.

SAN MATEO CREEK:

The original diversion from San Mateo Creek was made by the construction of the San Andres Dam in 1870, since which time diversion and use has been continuous from this source.

That was followed by diversion from the point of crossing of the Pilarcitos Aqueduct of San Mateo Creek, in 1867, continued to 1885.

A third diversion was made following the completion of the Upper Crystal Springs Dam in 1877, and continued from that point, until 1888. In that year the Lower Crystal Springs Dam was completed,

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when the reservoir created by it became part of the enlarged Crystal Springs Reservoir. Since that time, 1888, the diversion and use have been continuous from the lower point.

For the first three points of diversion, no water rights were purchased, the right of diversion being acquired by continuous use.

For the right of diversion at the fourth point, the Lower Crystal Springs Dam, the riparian rights on the San Mateo Creek and the San Francisco Bay were purchased by the Company mostly in the years from 1887 to 1890.

8774

LAKE MERCED:

Water has been diverted from Lake Merced by the Spring Valley Water Company since 1877. Water rights were purchased in 1868 and in 1872.

Mr. Searls: Mr. Greene, as far as Lake Merced is concerned, can we agree at this point that that original purchase was not a purchase of water rights exactly, but of water stock or stock in the company that was to have the right to condemn certain rights?

Mr. Greene: I remember that you introduced some testimony with regard to that at the start of the case, taken from the records of the company, as I recall it.

Mr. Searls: Yes.

Mr. Greene: At any rate, that will apply here. Mr. Anderson has simply taken the book records as he found them, have you not, Mr. Anderson? A. Yes.

Mr. Greene: I am not sure what your interpretation of that is now.

Mr. Searls: I do not know that it is going to be very material, but in order to have the truth of the matter, as I understand it, the Spring Valley Co. bought stock in the Clear Lake Water Co., and that company was organized for the purpose of condemning certain lands around Lake Merced, and what the company really acquired at the time was the right to take up this condemnation proposition; the Commissioners were subsequently appointed by the Superior Court, and I lost the record at that time and never have been able to find out what they did report.

8775

Mr. Greene: Mr. Anderson is going to discuss these purchases as far as they are available in detail, and I think there will not be any disposition to question the fact, if it is the fact, that you have just referred to. Mr. Anderson simply took the records as he found them.

ORIGINAL COST OF ACQUIRING RIPARIAN RIGHTS BELOW
THE POINT OF DIVERSION:

The original cost of acquiring the riparian rights on the various streams has been investigated and extended research has been made into all the available records of the several transactions.

These records are far from complete, and at best, the results give merely an indication of the probable actual costs.

ALAMEDA CREEK:

On this stream, the transaction embraced four distinct characters of acquirement, below Sunol.

(a) The riparian rights on lands, wherein cash payments only were made.

(b) The riparian rights on lands wherein either obligations to furnish free water service were the only considerations, or wherein these were in addition to cash payments.

(c) The purchase of the Washington and Murray Township Water Company, in a total of 32,610 shares.

(d) The purchase of lands and water rights embraced in what is described as the Alameda or Calaveras \$1,000,000 purchase.

8776 The last mentioned transaction included the Vallejo Mills property which may have been worth in 1875 from \$40,000 to \$50,000. There were also 3720 acres in the Calaveras Valley, which at the average rate paid for similar lands in Calaveras Valley in the same year, 1875, \$56 per acre, would represent \$208,320.

Together these items may have been worth from \$248,320 to \$258,320, say \$250,000, leaving \$750,000 as the price paid for water rights in Alameda Creek.

Of the 32,610 shares of the Washington and Murray Township Water Company, the record shows a cash payment of \$13,386.40 for 6,760 shares. 550 shares were included in the cash payment for riparian rights on the land of Jane R. Clough. There is no record of the consideration paid for the remaining 25,300 shares.

The total cash payments made are as follows:

(a)	Cash only, as shown by Exhibit C \$	230,302.48
(b)	Cash, with water service additional, as shown by Exhibit D and Appendix D	116,160.75
(c)	Cash, for 6760 shares in Washington and Murray Township Water Company	13,386.40
(d)	Cash, for riparian rights in Alameda Purchase	750,000.00
		<hr/>
		\$1,109,849.63

The Alameda Water Company Purchase was originally paid for in bonds at 7 per cent. subsequently exchanged in large part for Spring Valley Water Company First Mortgage Bonds at 6 per cent.

The following items covered by "Exhibit C" show the list of purchases of cash payments and in "Exhibit C" there are tabulated by

parcel number the name of the grantor, date of purchase, the area of the tract, and the cost, with additional remarks on the side column, showing a total of \$230,302.48 on page 3 of "Exhibit 3".

"Exhibit D" shows the list of purchases for cash payments and water service subdivided as the items were in "Exhibit C".

In two cases Parcel 660, H. B. Ellsworth, no cash was paid, but the consideration amounted to a burden of 100,000 gallons a day free, and in Item 711, California Nursery Co., no cash consideration, but a burden of 50,000,000 gallons per annum free.

8777

The total of the cash payments in these items, which include free water service, is as shown in the tabulation, \$116,160.75.

In "Exhibit E" the analysis of the original cost is shown arranged chronologically, and as shown on "Exhibit E", there are three parcels of land naturally associated with group (a), for which no information on cost can be obtained, 673 Whipple, 710 Ingalls, and 719 Ralph, in addition to Parcel 659 Miller, the acreage of which is not given.

In Appendix E an estimate is made of the cost of acquiring the rights from these parcels by applying the prices developed from transactions made at the same period, within the same month generally.

That shows a total of \$4,640.46.

Exhibit E is a summary of all the transactions in which obligations to furnish free water service were part or all of the consideration.

The cash equivalent of these water obligations has been estimated in Appendix D on the basis of their value to the grantor at the date of purchase; and Appendix D is the individual items in each parcel and the method of arriving at an estimate of that cost.

The cost of pumping, the basis of the estimate of cash equivalent, has been placed at $2\frac{3}{4}$ cents per 1000 gallons, which, in my own experience, is a very low cost. That figure is the average of a number of tests in the Santa Clara Valley in 1904, referred to in Bulletin 158, office of Experiment Stations.

8778 $\frac{1}{2}$

It is probable that the cost of pumping deduced in 1904 in the Santa Clara Valley are less than they would have been along the Alameda Creek in 1888-89.

From that analysis it is concluded that the cash equivalent in 1888-89 of these free water services would have been \$56,442.67.

In connection with the Washington and Murray Township Water Company, the Spring Valley Water Company acquired, in 1887, 25,300 shares on which there is no record of cost.

8779

A number of shares, 2,960, were purchased in the same year at an average cost of 53.6 cents per share. Applying a price of 50 cents per share to these 25,300 shares there would be an addition to the cost of acquirement of \$12,650.

With these additions, the consideration from the available but incomplete record would be:

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(a)	Cash consideration, Exhibit D.....	\$ 230,302.48
	Cash consideration, estimated, Appendix A	4,640.46
(b)	Water services, cash, Exhibit E.....	116,160.75
	Water services, estimated, Appendix B	56,442.67
(c)	Washington and Murray Township Water Co., cash	13,386.40
	Washington and Murray Township shares, etc.	12,650.00
(d)	Alameda Water Co. Purchase, cash..	750,000.00
		<hr/> \$1,183,582.76

The total area of the riparian tracts below the point of diversion on Alameda Creek, from which the riparian rights were acquired, and covered by the above items, is 6470.167 acres.

Deducting the area of three parcels on which information on cost of purchase is not obtainable, the area is 6402.557 acres. Considering only, in the first instance, the cash payments made for the attaching riparian rights, there is a total of \$346,463.23, items (a) and (b), page 27. The average cash payment would thus be \$54.11 per acre.

8780 In the second instance, it is essential to add the cash payments made for the Washington and Murray Township Water Company (\$13,386.40) and for the water rights included in the Alameda Purchase (\$750,000).

It was necessary for the Spring Valley Water Company to acquire the ownership of the Washington and Murray Township Water Company to complete the exclusive right of diversion by the former. The latter was not only an adverse user, by virtue of appropriation rights in 1872, but it also owned some of the riparian rights of some riparian land owners previously conveyed by direct conveyance or by a blanket deed.

It was just as necessary to acquire the rights included in the Alameda Purchase in order that the Spring Valley Water Company could complete its exclusive right of diversion. The Alameda Purchase, among others, included the right of diversion by the Vallejo Mill.

The total cash payments would then be \$1,109,849.63 as shown on page 27, and upon 6402.557 acres would give an average cash value of \$173.34 per acre.

In the third instance, including the estimated equivalent cash value of all items on which information is lacking, the total sum of \$1,183,582.76 would be applicable to 6470.167 acres, giving an average of \$182.93 per acre.

In addition to the totals given above, there are a number of tracts

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between Sunol and Niles which the Spring Valley Water Company purchased in order to acquire the riparian rights.

The cost of the riparian rights in such cases would be represented by the cost of the land occupying the stream bed, and banks. In some few instances either all of the land acquired lies in the stream bed, or the total purchase price covered the necessary expenditure for riparian rights only. In the other instances, the unit price of the tracts was not separated between stream bed and other lands and only an estimate can be made of such segregation at the present time.

8781

The real estate appraisers for the Company have not included any value for such stream bed lands in their valuation.

Herewith is submitted a statement of these lands with an estimate of the cost of the riparian rights attaching to these lands.

Parcel	228—Felton	\$10,000.00
"	239—Sunol Land Co. and Stone.....	10,000.00
"	267—Bangs	
"	F-239—Plumtaux and Steiner.....	1,000.00
"	E-239—Feusier	3,000.00
"	D-239—King	
"	233—Krebs	1,500.00
"	B-239—Mehrman	10,000.00
"	A-239—Mayborg	6,000.00
"	224—Alameda Purch.	
"	225—Alameda Purch.	
"	231—Clarke	4,000.00
"	232—Goad	400.00
"	235—Mayhow	15,000.00
"	263—Ellsworth	1,126.60
		<hr/>
		\$62,026.60

For Parcel 228 a total sum of \$29,841 was paid June 30, 1887. The Sunol dam site and tunnel right of way were covered in the purchase, of which \$10,000 probably represented the value of the riparian rights.

Parcel H-239 touches the stream bed in the corner near the Sunol Dam and covers rights on Sinbad Creek. The cost was \$26,995, June 23, 1898, of which \$10,000 may reasonably be estimated as the cost of the riparian rights.

Parcel 267 touches the stream bed for a short distance only and no value is attached.

8782

Parcel F-239 cost \$1500 for 9.81 acres on May 31, 1898. It is wholly riparian; the land value in 1898 may have been \$500, leaving \$100 as the cost of the riparian right.

Parcel E-239 contains practically 10 acres of stream bed land. The whole tract of 29.99 acres cost \$4500 May 31, 1898. It includes

right of way. The riparian right of way may be estimated at \$3000.

The riparian rights attaching to Parcel D-239 may have been included in Parcel 734, same original owner.

Parcel 233 cost \$1500 June 21, 1891, and was acquired solely for riparian rights.

Parcel B-239 cost \$15,000 May 31, 1898, and contains 20.56 acres stream bed (estimated). There is a right of way on the land, and \$10,000 is the estimate of cost of riparian rights.

Parcel A-239 cost \$8000 May 31, 1898, and contains 20.32 acres stream bed (estimated) and has also a right of way on it. \$6,000 is estimated as cost of riparian rights.

Parcels 231, 232 and 235 were acquired in settlement of boundary dispute in connection with Parcels 224 and 225, included in the Alameda Water Co. Purchase, and the costs in these three cases were solely for riparian rights.

Parcel 263 cost \$1,126.60, July 15, 1909; is solely stream bed and total cost was for riparian rights.

There is thus an addition of \$62,026.60 to be made to the cash payments previously accounted for, making a total of \$1,171,876.23, and of \$1,245,609.36, including the estimate of items not covered by record of actual costs.

SAN MATEO CREEK:

Information on the original cost of acquiring the riparian rights on this stream is much more limited than on Alameda Creek.

There are only two characters of transactions—cash payments and cash payments with water service at the rate of 5 cents per thousand gallons.

Below Crystal Springs Dam, the point of diversion, there were 17 grants of riparian rights.

In 9 cases, the cash consideration is known. In 4 out of these 9 cases the consideration was based upon creek frontage at the rate of \$1 per lineal foot. In 4 other cases it is known that the consideration was upon the same basis of creek frontage as the prevailing rate, but no record of the transactions is available. In two other cases there is no existing record of any kind. Two cases involved obligations to furnish water.

The total cash payments made are as follows:

(a) Cash, only, as shown by Exhibit "G".....	\$ 4,185.35
(b) Cash, with additional allowance for water service, as shown by Exhibit H.....	166,000.00
	<hr/>
	\$170,185.35

The total riparian area included in these grants was 1685.78 acres, and the cash payments were at the average rate of \$100.95 per acre.

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Exhibit I is an estimate of the cost of securing the riparian rights on six tracts, on which no data is available.

On the Hayward tract, the average price paid for the tracts in which the consideration is known is applied. On the other five, the frontage rate of \$1 per lineal foot is applied, and the total estimated cost averages less than \$100 per acre.

Questioned by Mr. Greene.

The Hayward tract is situated at the junction of San Mateo Creek with San Francisco Bay, below the town of San Mateo, and occupies strategically the most commanding position, so far as riparian rights are concerned, on San Mateo Creek. In filling out my table I applied the same ratio to that that I found from other known instances. I have taken an average rate in the other cases.

8784

Witness: JOSEPH N. LeCONTE for Plaintiff.

8785

DIRECT EXAMINATION BY MR. GREENE.

LeConte

I reside in Berkeley. I have heard certain testimony of Mr. Anderson which referred to a report made under my supervision some years ago. At the time of making the report I was acting as an agent for the United States Government, Department of Agriculture, and the figures which were given in that report were acquired while I held that position. The field tests were made under my direction, and the calculations were made, and the report written by me.

The pamphlet containing the report is entitled "Mechanical Tests of Pumping Plants used for Irrigation, by J. N. Le Conte, "Expert in Pumping."

8786

ONE HUNDRED AND TWENTY-FIRST HEARING.
MARCH 22, 1916.

Witnesses: GEORGE G. ANDERSON for Plaintiff.

F. C. HERRMANN for Plaintiff.

(Certain corrections noted in the transcript).

8787

(Counsel for Plaintiff called attention to the stipulation on page 8661 of the transcript, with regard to the date at which structures should be deemed to have gone into use for a given year, with the statement that it did not cover lands).

Witness: GEORGE G. ANDERSON for Plaintiff.

Anderson

DIRECT EXAMINATION BY MR. GREENE.

8788

In the cases involving water service, the ascertainment of cash equivalent cannot be made on the basis employed for similar service on Alameda Creek.

The facilities for securing a water supply are less favorable on San Mateo Creek than on Alameda Creek; wells are deeper to water plane, more extended distributing service is required, and water would be pumped to a greater elevation than the ground surface.

Information on pumping costs or on delivery of water by any means in that district in 1887 is not obtainable. The fact that the charge of 5 cents per 1,000 gallons was included in the bargain would indicate that such water service had previously cost the grantors more than that.

In 1884, one of the parties conveying riparian rights with burden of water service—Howard—made contract with the Spring Valley Water Company, as part consideration for right of way, for the supply of 500,000 gallons per day at 15 cents per 1,000 gallons, and several other contracts were made about that time at the same price.

8789

The Howard contract, which is quoted in this exhibit, did convey riparian rights, but there was another contract made by the same Howard, in 1884, for a right of way, and in that contract there is a bargain for 500,000 gallons per day, which is additional to the burden in the riparian right contract, and distinct from it. It is not an obligation on the part of the company to deliver 500,000 gallons daily. In the riparian right contract they are obligated to furnish 150,000 gallons at 5 cents; that was entered into in 1887. In 1884, three years prior, the same Howard gave a right of way to the Spring Valley Water Co., and in that contract made a stipulation of securing 500,000 gallons per day at 15 cents per thousand gallons. In other words, the contract that I refer to in this last paragraph was three years prior to the date of the contract for riparian rights.

There would thus be a burden of 10 cents per 1,000 gallons on this water service, and, as shown by Exhibit 'K', this represents a total additional consideration of \$112,291.

The total consideration for the riparian rights on San Mateo Creek would then become:

(a)	Cash only, as shown by Exhibit G....	\$ 4,185.35
(b)	Cash, with additional allowance for water service, as shown by Exhibit H	166,000.00
(c)	Estimated cash considerations, as shown by Exhibit I.....	84,665.00
(d)	Estimated value of water service, as shown by Exhibit K.....	112,291.00
		<hr/>
		\$367,141.35

PILARCITOS CREEK:

There is but one tract on Pilarcitos Creek from which riparian rights were purchased, where information is obtainable. That was

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for a small tract of land, with mill, in which the consideration paid in cash for the riparian right only was \$3,000. 8790

LAKE MERCED:

There were two transactions covering one item of riparian rights connected with Lake Merced.

The Clear Lake Water Company was paid in cash, August 3, 1898, \$150,000 for water rights and subsequently, one Weaver, was paid \$15,000 for his interest in the same parcel, on April 25, 1872, a total of \$165,000.

* * * *

The summary of original costs as far as ascertainable, in cash payments, from the incomplete information, thus becomes:

Alameda Creek	\$1,171,876.23
San Mateo Creek	170,185.35
Pilarcitos Creek	3,000.00
Lake Merced	165,000.00
	<hr/>
	\$1,510,061.58

To that amount would be added the value of items acquired of which no record exists, which on Alameda Creek is estimated at \$73,-733.13, and, on San Mateo Creek, at \$196,956.

ASSESSED VALUES OF RIPARIAN RIGHTS, 1915-16:

The riparian rights are assessed for taxation on Alameda Creek only.

The assessment is based upon the length of creek frontage at the rate of \$12 per lineal foot on each side of the creek.

Exhibit "L" gives an analysis of the riparian rights on Alameda Creek as assessed in 1915-16.

In the exhibit, all of the original transactions are shown as being assessed except the Alameda Purchase and the following six parcels: 8791

J. Rose	Parcel 658	40.0	acres
F. E. Miller	" 659	....	"
Jos. Soas	" 666	26.0	"
F. S. Ingalls, et al.....	" 710	17.46	"
F. King, et al.....	" 734	27.00	"
Pacific Improvement Company..	" 746	23.40	"
		<hr/>	
Total		133.86	acres

The total assessment is \$1,350,228 applied to 6470.167 acres, less 133.86 acres, or 6336.307 acres, which gives an average assessed value of \$213.09 per acre. That may be compared with the total known cash

payment on 6402.557 acres of \$346,463.23, an average acreage cost of \$54.11 per acre (page 29) showing that assessed value in 1915-16 is nearly four times original cost in 1888-89.

Including the Alameda Purchase, assessed at \$52,032, there is a total assessed valuation in 1915-16 of \$1,402,260 compared with total known cash payments in 1888-89 of \$1,171,876. If, as is otherwise regarded as the general practice, the assessed value is 60 per cent of real value, the riparian rights are worth today, in the judgment of the appraiser, \$2,337,100 which would indicate a present day value of practically twice the original cost.

8792 ASSESSED LAND VALUE—ALAMEDA CREEK:

In Exhibit 'E' is shown the assessed values in 1915-16 of the riparian lands from which the riparian rights were acquired in 1888-89, comparing with the acreage cost of the riparian rights, the acreage, and date of purchase.

Eliminating several lots in Union City and a tract of land now worked as a quarry, the highest assessed valuation at the present time is \$200 per acre.

On the 60 per cent basis this indicates a real value of \$333 per acre, or over six times the original cost per acre of these riparian rights—\$54.11.

I am comparing the assessed value of the land with the cost of the rights.

Record of recent sales show, however, higher values than that, ranging from \$500 to \$600 per acre.

* * * *

On San Mateo Creek it is not found possible to make a similar comparison of assessed values over the intervening period, largely because the lands have almost wholly been subdivided into lots.

The assessed values at the present time are, however, from three to six times those of 1887.

* * * *

REPRODUCTION COST:

From these various considerations of increased value of these riparian rights, as shown by the assessments of them on Alameda Creek, of the increase in assessed land values on Alameda Creek and on San Mateo Creek, considering that the current land value would have influence on the cost of acquiring these riparian rights, and of the increase in the real value of the lands from which the rights are to be separated, it appears that the cost of acquiring them at the present time would not be less than three times the original cost. From the investigation made, it is considered that it would not be possible to

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acquire them for the amount given as their value at the outset of this report.

It is very doubtful if they could be so acquired now within the limits of reasonable cost. On Alameda Creek, discussion and litigation have been almost continuous in recent years, and as a result of that, the owner of the riparian tracts has now the opinion that these rights are of great value. Whether the separation of them from the riparian tracts would now represent a damage to them of corresponding value is not the basis of such opinion so much as the conception of their great value to a probable purchaser.

It is considered extremely doubtful if any considerable portion, or any of them, could be secured by individual negotiation, or by other means than through the process of legal condemnation. In any event, the prices agreed upon or awarded would probably be based upon the present day land value, and the estimate of that land value reduced by the detachment of the riparian rights. That would represent generally an amount that would mean from three to five times the original cost, or on Alameda Creek, from \$150 to \$250 per acre of the riparian tract.

On San Mateo Creek the riparian lands have increased in value actually more than assessed values would indicate, as they have become the sites of highly developed suburban homes. Under the circumstances, the cost of severing the riparian rights from these lands, if they were now attached, would probably be prohibitive for even domestic purposes.

8794

On the assumption that the cost would be three times that originally incurred, there would be an expenditure of \$4,530,185. It might be that the Alameda Purchase would not involve a trebled cost at this time. It is probable, on the other hand, that a number of individual items would involve a greater multiple.

On the total delivery of 39.7 million gallons, practically 40, on December 31, 1913, omitting, for the present time, consideration of the safe yield of the rights, there would thus be a resulting value of \$113,254 per million gallons daily.

In review of the various methods by which value has been tested it is my opinion that the value of the water rights of the Spring Valley Water Company for the use of the City of San Francisco during the year 1913, is \$4,240,000.

(Memorandum of water rights valuation, Spring Valley Water Co., George G. Anderson, offered and marked "Plaintiff's Exhibit 172".)

Questioned by Master.

The product of 39.7 millions times 113,254 is 4,530,185. The process in reaching \$4,240,000 is on page 4; that is practically the ap-

8795

plication of the values ascertained in Southern California, reduced to \$100,000 per million gallons daily.

Herrmann Witness: F. C. HERRMANN for Plaintiff.

DIRECT EXAMINATION BY MR. GREENE.

8796 I am familiar with all the water rights of the Spring Valley Water Co., and the operation of the whole system, having been Chief Engineer of the company for several years, and I have given this matter a great deal of study for the last three or four years. I have worked particularly on this valuation over a period of about a year, or a year and a half, putting in altogether something like five or six months of actual work. I have had to deal with water rights of other companies and concerns by way of valuation of them, and also in advising some people in regard to transfers, and also in making appraisals.

In my experience with the Government Reclamation Service I had nothing to do with the value of water rights, although I had a great deal to do with the general theory of water rights, and of water right laws, and things of that sort. The appraisals which I speak of have been almost entirely concerned with water rights in California.

Questioned by Mr. Greene.

I have prepared a valuation of the water rights of the Spring Valley Water Co., as of December, 1913, and also as of the preceding and succeeding years which are covered by these consolidated suits. I have only given the total value in the case of 1913, but have given the amount of water rights, and I think the same units that I used will apply to the period in question. I have reduced that to a report.

8797 Mr. Anderson: I have given consideration to the value of these water rights in the other years between 1907 and 1914 that we are concerned with here. I think in the application of my valuation of \$100,000 per million gallons daily to the average consumption yearly I would make that unit apply on the Peninsula sources to the full quantity of 19,000,000, which I estimated as the safe yield, as being the developed supply, and also to Lake Merced as 3.4 million as the developed yield, and on Alameda Creek preceding 1913 to the maximum amount of diversion at that time, and subsequent to that to the 4,000,000 gallons, which in my judgment is the capacity of that source under the conditions prevailing there.

DIRECT EXAMINATION BY MR. GREENE.

Mr. Herrmann:

EXTENT OF WATER RIGHT:

For the purpose of this valuation it is assumed that the extent of the Spring Valley Water Company's water rights over the period in

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question is the sum of the water rights at each of the different sources of supply as follows:

PENINSULA SYSTEM:

The extent of the water right of this system is its safe dependable yield, or 19.5 m.g.d.

ALAMEDA SYSTEM:

The extent of the water right of the system is taken as the maximum average daily draft sustained for one month from each of the years in question, prior to 1913, and the Alameda Pipe Line capacity of about 21.0 m.g.d. since and including 1913.

LAKE MERCED:

The extent of this water right is taken as the average daily draft throughout the period in question.

Following is a tabulation of the draft from each system and the extent of the water right thereof for the different years from 1907 to 1915 inclusive. 8798

Referring to the table which is to follow; as an illustration take the year 1913: In the first column the draft from the Peninsula system is 21.7 million gallons daily; the draft from the Alameda system was 13.1 million gallons daily; that is the average draft through the year. Lake Merced was 4.9 million gallons daily, and the total draft was 39.7 million gallons daily. In the corresponding year, 1913, the water right of the Peninsula system, considering the safe dependable yield, was 19½ million gallons daily; that of the Alameda system 21 million gallons daily, which was the pipe capacity at that time; from Lake Merced 3.4 million gallons daily, making a total of 43.9 million gallons daily. I have taken the maximum draft sustained for a month. In other words, it is the average daily draft throughout the month, and that applies to Alameda only. In reaching the safe dependable yield on the Peninsula system I went over all the records of the Spring Valley Water Co., and by determining the performance of the reservoir, as shown by the mass curve, determined its safe dependable yield, after making an allowance for loss by evaporation, etc., 19½ million gallons daily. In other words, that is based on the performances of that system since the record started. 8799

This safe estimated yield is based upon taking all these years into consideration; it is not an average. As an illustration, in the year 1912 in this table the draft from these reservoirs is 23.6 million gallons daily; the safe dependable yield from there is 19½ million gallons daily; in other words, they were drawing on the storage there, and the draft from there was larger than the draft which could be made uniformly through all of the years in which we have records. 8800

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AVERAGE DAILY DRAFT IN M. G. D.

EXTENT OF WATER RIGHTS
IN M. G. D.

8801	AVERAGE DAILY DRAFT IN M. G. D.				EXTENT OF WATER RIGHTS IN M. G. D.				
	Year	Peninsula System	Alameda System	Lake Merced	Total	Peninsula System	Alameda System	Lake Merced	Total
	1907	11.3	16.0	3.4	30.7	19.5	16.9	3.4	39.8
	1908	15.4	13.7	2.5	31.6	19.5	16.9	3.4	39.8
	1909	17.5	13.5	3.1	34.1	19.5	16.9	3.4	39.8
	1910	16.4	14.5	4.7	35.6	19.5	17.0	3.4	39.9
	1911	18.8	15.6	3.1	37.5	19.5	17.0	3.4	39.9
	1912	23.6	13.2	2.4	39.2	19.5	16.9	3.4	39.8
	1913	21.7	13.1	4.9	39.7	19.5	21.0	3.4	43.9
	1914	17.7	18.3	3.4	39.4	19.5	21.0	3.4	43.9
	1915	18.3	20.3	4.0	42.6	19.5	21.0	3.4	43.9

As of December 31, 1913, the water rights of the Spring Valley Water Company are equal to 43.9 m.g.d. Some of this water, however, is used to serve consumers outside of San Francisco, and deduction is necessary to cover this amount. If deduction of 900,000 g.p.d. be made, it will more than cover this use, so for the purpose of this case the extent of the combined water right will be taken as 43 m.g.d.

NECESSITY OF OWNERSHIP OF WATER RIGHTS:

By reason of the climatology, topography and geography of the region adjacent to San Francisco, there are three requisites for a good and adequate domestic water supply:—1st, the ownership or control of the catchment area; 2nd, the ownership of copious storage reservoir facilities; and 3rd, the ownership of the exclusive right to divert the water from its source to some other place for use. These three things are necessary and independent of one another. Without all of them the water supply would be imperfect.

8802 The Spring Valley Water Company has acquired the right to divert water from certain points on the Pilarcitos, San Mateo and Alameda Creeks, and from Lake Merced to the exclusion of others, in the amounts noted in the foregoing tabulation, and it is the value of this exclusive and prior right that is to be determined in the present case.

While it is impossible to determine the value of these rights in 1913 with exactness, it is my judgment that they were worth not less than \$100,000 per million gallons daily or a total of \$4,300,000.

ACQUIREMENTS OF WATER RIGHTS.

The water rights of the Spring Valley Water Company have been acquired by adverse use and by purchase, sometimes in conjunction with, and sometimes apart from riparian lands. Records are available which, when assembled, give some of the cost to the

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Company of some of the water right, though the record is not complete, and where both lands and water rights have been purchased together it is impossible to separate precisely the cost of the water right from that of the land though an attempt to do this in some instances has been made.

PILARCITOS CREEK.

Water is diverted from Pilarcitos Creek at Pilarcitos Reservoir and at the Stone Dam. This was the first source utilized by the Company, the Pilarcitos Dam having been put in use in 1867, and the Stone Dam in 1871. The earliest water right to be purchased by the Company was that of a grist mill at Spanishtown (now Half Moon Bay) in 1861. For this the Company paid \$3,000; \$6,000 having been paid for the mill and the water right and the property ex-water rights having been subsequently sold by the Company for \$3,000. The amount of this water right is unknown, and there is no data available by which it may be determined. The grist mill was located on the bank of the stream and like all mills of that type and time, the water was probably diverted from the creek a short distance above the mill and conducted to a paddle wheel by a flume of small capacity, and turned back into the stream immediately after it left the wheel. The water was not diverted from the stream and used elsewhere, and was therefore not of the same character as the water rights of the Spring Valley Water Company. It was probably limited to the extent of the low water flow, probably from 3 to 5 second feet.

8803

No other water rights on Pilarcitos Creek were purchased by the Company, the rest of its present water right, amounting to approximately 5.5 m.g.d. at the present time, having accrued to it through constant and exclusive diversion and use through a long period of years. Other water rights to tributaries of the Pilarcitos Creek were purchased, but as these are not now used for the purpose of supplying water to the City of San Francisco they are not considered in this valuation.

SAN MATEO CREEK:

The first diversion from San Mateo Creek was made by the construction of the San Andres Dam in 1870, and since that date diversion and use of water from this source has been continuous.

The second diversion from San Mateo Creek was made at its crossing with the Pilarcitos Aqueduct in 1867, which was in use until 1885.

The third diversion was made by the construction of the upper Crystal Springs Dam in 1877 from which water was diverted and used continuously up to the time (1888) of construction of the

8804 lower Crystal Springs Dam, at which time the reservoir created by the upper Crystal Springs Dam became a part of the larger Crystal Springs Reservoir.

The fourth diversion was made by the construction of the lower Crystal Springs Dam in 1888, from which time water has been continuously diverted from this point and used elsewhere.

No water rights were purchased by the Company to secure the right to divert water from the San Mateo Creek at the first three points of diversion, the Company's right to divert at these points to the extent of 9 m.g.d. being acquired by long and continuous use.

The right to divert at the fourth point of diversion (the lower Crystal Springs Dam) was acquired by the Company through the purchase of the rights of lands riparian to San Mateo Creek between Lower Crystal Springs Dam and the San Francisco Bay. Practically all of these were acquired between 1887 and 1890. In 1883, or prior to the above purchases the properties of the San Mateo Water Works were purchased, a condition of this purchase being that the Spring Valley Water Company would deliver, without further charge, 300,000 gallons per day to the San Mateo Water Works at a given point near San Mateo.

ALAMEDA CREEK:

Diversion was first made from Alameda Creek by the Spring Valley Water Company at the Niles dam in 1888, from which point water has been diverted ever since, although since 1900 the diversion point of water for consumption in San Francisco has been at the Sunol dam about two and one-half miles upstream from the Niles dam.

8805 The rights in Alameda Creek were acquired by diversion and use and by the purchase of the rights of the San Francisco and Oakland Water Company and the Alameda Water Company in 1875, those of the Washington and Murray Township ditch in 1887, and those of lands riparian to Alameda Creek below the points of diversion in 1887 to 1910. Most of these latter purchases were made in 1886-90. The purchase from the Alameda Water Company included the old Vallejo Mills rights which antedate all other rights on Alameda Creek. No data is available from which may be found the extent of this water right. As in the case of the Spanishtown Grist Mill, it probably amounted to the extent of the low water flow at that time, which I believe would be about 10 cubic feet per second.

By long and continued use the Spring Valley Water Company in 1913 and subsequently owned a water right on Alameda Creek to the extent of 21 m.g.d. against all owners of riparian lands and land with percolating waters below Niles.

LAKE MERCED:

Water has been diverted from Lake Merced by the Spring Valley Water Company since 1877. The use of water from this source has been continuous except for the years 1896 and 1897, during which time the records indicate that no use was made of water from this source. Water Rights to Lake Merced were purchased by the Spring Valley Water Company from the Clear Lake Water Company in 1868, and from one Weaver for an interest in the above in 1872.

From the foregoing it is seen that the water rights of the Spring Valley Water Company are based partially upon the purchase of the right to divert, and partially by long and continuous diversion and use.

VALUE OF WATER RIGHTS IN GENERAL.

Only water rights for the consumption of the water itself are considered here. These are totally different from the rights for the use of the energy, etc., that may be in the water.

8806

The value of a water right depends upon its character, availability and desirability.

By character I mean the permanency and reliability of supply, as to the portion of year that the supply is available, the degree of certainty of its recurrence and its priority to the exclusion of other water rights on the same stream and the use to which it is put. Thus an irrigation water right which usually supplies water more or less regularly for one-half the year to 250 days only is not nearly so valuable as a water right for domestic purposes which supplies water continuously and regularly for the entire year to the exclusion of all other rights.

By availability is meant the nearness or remoteness of the water right to or from the place of water use, as well as the ease with which it may be utilized. Thus a water right which is very near to the place of use and may be utilized readily and economically, is of greater value than one that is remote from the place of use, thereby making the cost of its utilization very large, and the certainty of its continuity of service questionable.

By desirability is meant its desirability both as to the quality of the water and in comparison to other water supplies. Thus it may be that due to climate or other reason there may be many copious water supplies nearby, each easily obtained, in which case the value of a water right will be much less than under conditions where only a few water supplies are available and some of these only at great cost. In other words, it is somewhat the same as supply and demand.

8807

THE SPRING VALLEY WATER RIGHTS.

In character these water rights are of the highest quality and represent the actual, continuous and exclusive use of water for many years in a gradually increasing amount, for the highest use to which water can be put.

As to availability, they are very close to the place of use, San Francisco, and much nearer, and may be utilized much more readily and economically than any other adequate supply.

As to desirability, the quality of the water is excellent. The climate of San Francisco is not humid, in fact it is semi-arid, and the adjacent topography is such that a number of nearby copious supplies are not available.

The Spring Valley Water Company's water rights are therefore first class in every particular and consequently are of high value.

METHOD OF VALUATION.

Endeavor has been made to arrive at the fair market value of these water rights. If the exchange of neighboring and comparable water rights were of frequent occurrence, this would be the best guide as to their market value. But transactions of this sort are not numerous, in fact there are very few of recent date of which I have knowledge. It has been necessary therefore to use other yard sticks from which judgment may be formed as to their fair market value.

Consideration has been given to the following:

1. Reproduction cost of these water rights.
2. Cost and value of other water rights of a more or less comparable nature.
3. Assessed value of these water rights.
4. Original purchase price of these water rights.
5. Enhanced value of land to which water rights are attached over those which have no water right attached.

8809

REPRODUCTION COST:

Since the acquirement of the water rights along San Mateo Creek by the Company, the lands from which these rights were acquired have enhanced in value enormously, as they are used at the present time almost exclusively for the most beautiful suburban homes. If these water rights were still attached to the land from which they have been severed, it is believed that they could be secured only through condemnation proceedings.

It is not possible to say what value would be placed on these rights in such a proceeding, though I believe it would certainly be prohibitive even for a domestic water supply.

To a somewhat less extent the properties along Alameda Creek below Niles have enhanced in value. In addition to this, adverse activity among the property owners has embedded in their minds exaggerated ideas of the value of the water rights which they have sold, so that here again condemnation proceedings would be necessary, and it is my belief that here again the value awarded in a condemnation proceeding would be prohibitive. The same thing, I feel sure, would apply to the rights on Lake Merced and Pilarcitos Creek.

In fact in all these cases conditions would have to be assumed and deductions made which would be so speculative that I believe reproduction cost is not a possible criterion for determining the value of these water rights and have therefore given it no weight in this treatment. Were these assumptions and speculations made I believe that the resulting values would be far in excess of the value I have placed on them.

COST AND VALUE OF OTHER WATER RIGHTS.

Since practically all the water rights in this immediate neighborhood have been owned and put to use by the Spring Valley Water Company and other corporations, both private and public, for a considerable number of years, it is necessary to go somewhat farther away for sale prices of water rights. Even so, sales are not many in number and of these very few are of recent date. 8810

In the territory immediately adjoining the Bay region, data is available of one recent sale at the town of Livermore, two recent sales of small water rights near Los Gatos, and the purchases of the San Jose Water Company which are prior to 1900.

1. LIVERMORE SALE.

This was the sale of water rights on the Mocho and Positos Creeks to the extent of about 1 m.g.d. by the Livermore Water & Power Co. to the Pacific Gas & Electric Company in 1913. I am informed that the sale price was \$100,000.

2. BECKWITH-COULT SALE.

8811

In 1914 J. H. Coult purchased from N. E. Beckwith a right to 2,000 gallons per day from Beckwith Springs near Los Gatos, which right was reserved by Beckwith when he sold the rights of the Beckwith Springs to the Mountain Spring Water Company in 1891. The sale price of this right to 2,000 gallons per day was \$2,000.

3. PHILLIPS-OSBORN SALE.

A spring near Los Gatos was owned jointly by C. H. Phillips and H. G. Osborn. Each had an equal share, and each offered to buy

or sell his interest to the other. The spring flowed 1,000 gallons per day. In 1915 Phillips sold his interest to Osborn for \$700.00.

The three foregoing are the only recent sales around the San Francisco Bay of which record is available. These occurred in 1914-5 and are within sixty miles of San Francisco. Taking their sum we have a sale price of \$102,700 for 1,002,500 gallons per day, or at the rate of \$102,444 per m.g.d.

EARLIER SALES TO THE SAN JOSE WATER COMPANY.

4. LOS GATOS GRAVITY SUPPLY.

8812 The water rights for the gravity supply of the San Jose Water Company in the Los Gatos Creek were purchased from the Los Gatos Manufacturing Company, the Mountain Springs Water Company, and a number of others in a number of transactions extending from 1887 to 1913. Practically all of these purchases were made prior to 1900. The cost to the San Jose Water Company, as determined by the California Railroad Commission, was \$94,046.30. The amount of these water rights at the time of purchase is not known but it was materially less than the average draft from this source for the three years 1912 to 1914 inclusive, which was 3,120,000 gallons per day. However, using the draft in these late years the average cost of these rights was at the rate of \$30,100 per m.g.d. These purchases were contemporaneous with the Spring Valley Water Company's purchases on Alameda and San Mateo Creeks, and any one who is familiar with the Los Gatos canyon cannot but realize that these rights would cost at this time several times what was paid for them nearly 30 years ago.

5. SARATOGA GRAVITY SUPPLY.

The water rights for the Saratoga Gravity supply on Saratoga Creek were purchased from the Saratoga and Lick Paper Mill Company in 1887, and minor rights to the same were purchased in small parts at various times up to 1913. The total payment made for these rights was \$13,282.50. The maximum draft from this source is 150,000 gallons per day. The purchase price was therefore at the rate of \$88,500 per m.g.d. As in the Los Gatos canyon, it would be impossible to purchase these rights at the present time for anything like the sum paid for them by the San Jose Water Company in 1887. That last statement is my own opinion.

6. ALMOND GROVE WELL IN LOS GATOS.

The water right to the Almond Grove Well was purchased by the Mountain Springs Water Company (Predecessor to the San Jose Water Company) from John Bean in 1891. The purchase price of

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land, improvements and water rights was \$13,500, of which it is estimated by the purchaser that \$10,000 was for water rights. The estimate was made by Mr. Ryland, the president of the San Jose Water Co., who has been connected with the San Jose Water Co. for a great many years, that that amount of \$3500 is ample for the cost price of the land and improvements. 8813

(Objection was made to the foregoing statement in relation to the Almond Grove Well, in Los Gatos, and was sustained.)

The capacity of the well as determined in 1913 is 40,000 gallons per day. The purchase price was therefore \$250,000 per m.g.d.

7. ROBERTS SPRINGS NEAR LOS GATOS.

Roberts Springs was purchased by the San Jose Water Company from M. L. and G. R. Emerson in May, 1898. It is located about one mile northeast of Los Gatos. The purchase price was \$3,000 of which it is estimated by purchaser that \$2,000 was for the water rights. The yield is 35,500 gallons per day. The cost of this water right in 1898 was therefore at the rate of \$56,000 per m.g.d.

(The same objection was made to the foregoing statement as was made to the previous one, and the same ruling was applied.)

8. HILL WELL NEAR LOS GATOS.

The Mountain Springs Water Company purchased the Hill Well in September, 1898, from Levy Hill. This well is located about a half mile northeast of Los Gatos. The capacity of this well is 41,500 gallons per day. The purchase price was \$3,000, of which it is estimated by the purchaser that \$2750 was for the water right. The purchase price was therefore at the rate of \$66,200 per m.g.d. 8814

Taking the sales of water rights in the San Francisco Bay region, of which we have record chronologically, other than those of the Spring Valley Water Company, we have;

(The same objection was made to the foregoing statement as to the previous statements, and the ruling was the same.)

Sales prior to 1890.....	\$ 33,500 per m.g.d.
Sales between 1890 and 1900.....	126,500 per m.g.d.
Sales subsequent to 1900.....	102,444 per m.g.d.

The foregoing are sales for water rights for domestic purposes, necessitating continuous use throughout the whole year.

Records of sales of water rights in other portions of central California are very meager. Water is used for irrigating to a very great extent in this portion of California and is of vital importance to most of our lands. This is particularly true of the lands in the San Joaquin Valley, where many thousands of acres of land are irrigated at the present time.

8815

Large volumes of water are used for this purpose for about one-half the year. Fortunately a large portion of the irrigation period corresponds with the period of high run-off from the Sierra Nevada streams so that by reason of the large volumes necessary, and the fact that the irrigation period is seldom over 200 days, few purchases have been made of the prior rights which control the low water flow of the streams. Almost all of those that have been made are of rather old dates and no record is available as to the amount of money paid, or the extent of the right in question.

The only right of this sort that has been recently purchased is that of the Tulloch Ditch on the Stanislaus River which was purchased in 1910 jointly by the Oakdale and the South San Joaquin Irrigation Districts. The price paid was \$650,000. The extent of this right is given by the California State Engineer as 39,450 acre feet per year, the average amount of water that has been diverted through it since 1904. The maximum capacity of the ditch is 134 cubic feet per second. The water was used for irrigation over a period of probably 200 to 240 days per year. 134 cubic feet per second is equal to 86.5 m.g.d. 39,450 acre feet distributed uniformly throughout the year, would be at the rate of about 35 m.g.d. On this latter basis the purchase price of this right was at the rate of \$18,550 per m.g.d.

This is a right for irrigation purposes and is secondary in point of value to rights for domestic use. Because this right is not comparable the price is given no weight in determining the value of the rights under consideration; though it does show that even under the conditions as described a water right has substantial value.

The only other sales of water rights of which we have record are in Southern California, and are as follows:

8816

	per m.g.d
Judge Conrey in Los Angeles County Courts in a condemnation proceeding by the city of Sierra Madre, placed values on developed water for domestic use as.....	\$270,760
DeBart Shorb sold to Richard Garvey in 1892, 30 miner's inches of water from Kewen Canyon near Alhambra for irrigation use for.....	64,595
Mr. Knapp of Montecito bought 1 miner's inch of water which was the third right in the Warm Springs Tunnel for domestic and irrigation use at the rate of.....	386,000
The value of Water fixed by the California Railroad Commission in the Glendale case, in addition to all structure, was.....	154,720

We have therefore sales in Southern California averaging \$219,219 per m.g.d.

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Eliminating the high price paid by Mr. Knapp at Montecito for a small quantity of water, the average of the others is \$163,358 per m.g.d. With the exception of the DeBart Shorb purchase which was for irrigation and therefore used only for a portion of the year, these rights are for domestic purpose and control the use of water throughout the year. They are in a country where irrigation is essential, and only the rights of first priority will serve for domestic purposes. 8817

The amounts are smaller than the amounts of the rights of the Spring Valley Water Company, but I believe the condition of supply and demand in this instance is comparable.

Domestic use is the highest use to which water may be put.

California is largely semi-arid and arid, and by reason of this, the use of water for irrigation, particularly in these districts, is second only to that of domestic use. In order to get further light on the value of water rights, compilation has been made of the value of water rights for irrigation purpose where irrigation is more necessary and most highly developed.

In co-operation with Mr. G. G. Anderson, in conjunction with whom I made the following investigations, the values of water rights in nine mutual water companies in Southern California have been determined. Mr. Anderson will present the details of this determination. The values obtained are particularly instructive because these mutual companies are not subject to regulation by any regulating body, and the values which prevail reflect the opinion of the practical irrigator as to what they are worth for use on the land. The rights carry the right to use water for eight months of the year only.

Analysis of these nine mutual companies shows an average value of an eight months water right of \$108,609 per m.g.d. Similarly investigation has been made in the Santa Clara Valley where irrigation among the orchard lands is practiced. No actual sales of water rights are known but data is available in the U. S. Government Bulletins, from which values may be determined. Mr. Anderson will give the details of these computations, the final result being that the value of water rights for gravity ditches is from \$31,442 per m.g.d. to \$46,884 per m.g.d. The water rights of the gravity ditches are very inferior, as they provide water for a maximum of only 115 days. 8817½

The value of water rights for pumping plants which can furnish water throughout the year is \$222,042 per m.g.d.

ASSESSED VALUE:

8818

Water rights are not assessed in San Mateo or San Francisco Counties. In Alameda County the water rights of the Spring Valley Water Company were assessed from 1907 to 1914, inclusive, for

\$3,000,000, of which one-half is in Washington Township and the other half in Pleasanton Township. The assessment below Niles has been placed at \$12.00 per lineal foot of creek bank. Not having the total cost of these water rights, it is impossible to make a comparison between the total cost and the total assessment. However the assessed value of the water rights to 6336 acres on Alameda Creek has been placed at \$1,350,228, giving an average assessed value of \$213.09 per acre. The total known cash payments for the water rights on 6,402 acres on Alameda Creek was \$346,463, or an average of \$54.11 per acre. This shows that the assessed value in 1915 is nearly four times the original cost of about twenty-five years ago. If, as is usually the custom, the assessed value is 60 per cent of the real value, the real value of the Alameda Creek rights at this time is about \$2,250,000.

ORIGINAL PURCHASE PRICE.

Careful search has been made to determine as nearly as possible the original cost of these water rights to the Spring Valley Water Company below the points of diversion, viz., on Pilarcitos Creek below Pilarcitos Dam, on San Mateo Creek below Lower Crystal Springs Dam, on Alameda Creek below Sunol Dam, and on Lake Merced. Covering as they do transactions over a period of nearly half a century, it is impossible to determine this accurately. The cost of whatever water rights were attached to lands purchased by the Company was included in the cost of the lands and except in rare cases the cost of the water right can not be determined.

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In other cases where water rights alone were purchased no record at all is available which would indicate the price paid. In still other cases payments were made partly in cash and partly by assuming the burden of delivering water in different amounts to the land from which the water rights were secured. In one case (The California Nursery Co.) the entire payment was in the nature of the delivery of a large amount to the California Nursery Company's lands. The equivalent in money to these water burdens can only be estimated.

Thus it is seen that at best all that can be obtained is a partial cost of these water rights, and that the cost was at least this amount.

PILARCITOS CREEK.

As stated before, the only purchase on this creek was that of a grist mill at Spanishtown for \$3,000 amounting to possibly 2 m.g.d. though no definite information is available as to this amount.

SAN MATEO CREEK.

Grants were obtained from seventeen different parcels of land riparian to San Mateo Creek below the lower Crystal Springs Dam,

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aggregating 2535 acres. Of this area no data as to purchase price is available on six tracts aggregating 849 acres, leaving an area of 1686 acres for the eleven tracts where cost data is available. Of these eleven tracts two (the Howard & Bowie and the Parrott Estate) carry as part payment the right to purchase water from the Spring Valley Water Company at 5 cents per 1000 gallons up to 259,000 gallons per day. The cash paid on these eleven tracts in addition to the burdens, was \$170,185. If no consideration whatever be given this water burden, the cost for the water rights for 1686 acres was at the average rate of about \$101 per acre. Assuming that the same average price per acre prevailed for the tracts upon which no data is available, the purchase price for the 849 acres upon which no data is available would be \$85,749, making a total cash outlay of \$255,934.

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As to just what the value of the water burden to the land owners was at that time it is hard to say. He had to obtain his water by pumping from the San Mateo Creek against considerable head. Gas engines and electric motors were not in common use at that time and he probably used steam. It certainly cost him more than 5 cents per 1000 gallons or he would not have made this a part of the contract. It is my opinion that the pumping cost at least 10 cents per 1000 gallons, which would give a value of 5 cents per 1000 gallons to the water burden. From the Company's point of view, the value of the burden was from $7\frac{1}{2}$ to 10 cents per 1000 gallons, as the water delivered to the land cost the Company about $12\frac{1}{2}$ cents for 1000 gallons and they could sell it readily for 15 cents per 1000 gallons.

Questioned by Mr. Searls.

That $12\frac{1}{2}$ cents per 1,000 gallons is my judgment of what it cost. I did not make an estimate, as a matter of fact, but I think that is about what it cost at that time.

DIRECT EXAMINATION BY MR. GREENE.

If we assume the value of this burden at the smallest figure of 5 cents per 1,000 gallons, the burden would amount to \$12.95 per day, or \$4726 per year, which capitalized at 6 per cent would be \$78,780. Adding this to the \$255,934 given above would make a total outlay of cash and water burdens of \$334,714 on the basis given above.

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As noted previously in this report these riparian rights were purchased in order to secure the right to divert from the San Mateo Creek at the lower Crystal Springs Dam, water available over and above that to which the Company had already secured the right by long diversion and use at other points on the San Mateo Creek. This amount has proved to be $4\frac{1}{2}$ m.g.d. On this basis we have therefore the purchase price just prior to 1890 of the right to divert and use $4\frac{1}{2}$ m.g.d. for about \$335,000 or at the rate of \$75,000 per m.g.d.

Questioned by Mr. Searls.

The $4\frac{1}{2}$ million gallons daily was what was available after diversions had been made at the other points; that is what was available in addition to what they had already taken. Those figures are based on my knowledge, and the records of the company. The records of the company do not show what the diversions were before the Lower Crystal Springs Dam was built, but they do show the records of the San Andres; we have since the records of Lower Crystal Springs, and we have the division of area tributary to different points. By my knowledge of that country, and the division, I arrived at $4\frac{1}{2}$ million gallons daily. I have the flood water included in that too; they built the reservoirs so as to get that flood water.

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DIRECT EXAMINATION BY MR. GREENE.

By reason of their character and the climate a reasonable use of water on these riparian lands would be 1 m.g.d. to 540 acres, so that the lands from which these riparian rights were purchased could reasonably use 4.7 m.g.d.

ALAMEDA CREEK.

On Alameda Creek the records of purchases are more complete than are those on the San Mateo Creek. The purchases in which cash entered as all or a part of the compensation may be divided into four distinct classes which may be summarized with cash consideration for each class as follows:

(a)	Cash only	\$ 230,302
(b)	Cash with water burden added.....	116,161
(c)	Cash for a portion of the shares of the Washington-Murray Township ditch, 6760 Shares out of a total of 25,300 shares	13,386
(d)	Cash for water rights included in the Alameda Water Co. purchase of \$1,000,000	750,000
		<hr/>
		\$1,109,849

or, say \$1,109,850.

In order to arrive at the total outlay on Alameda Creek, items must be added for which estimates only are available. These items are:

8823 (1) The cost of the lands in the stream bed in Alameda Creek between Niles and Sunol, which have value only to the extent of the value of the water rights attached thereto. There are fifteen

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of these parcels which are either all in the stream bed or partially so. These parcels with an estimate of the cost of each are as follows:

Parcel	228—Felton	\$10,000.00
"	239—Sunol Land Co. and Stone.....	10,000.00
"	267—Bangs	
"	F-239—Plomtaux and Steiner.....	1,000.00
"	E-239—Feusier	3,000.00
"	D-239—King	
"	233—Krebs	1,500.00
"	B-239—Mehrman	10,000.00
"	A-239—Mayborg	6,000.00
"	224—Alameda Purch.	
"	225—Alameda Purch.	
"	231—Clarke	4,000.00
"	282—Goad	400.00
"	235—Mayhew	15,000.00
"	263—Ellsworth	1,126.60
		<u>\$62,026.60</u>

(2) The cost of riparian rights from three parcels of land (673,710 and 719) for which no record of cost is available. By the application of the average cash price paid for other adjacent parcels, it is estimated that the cost of the water rights to these three parcels was \$4640.

(3) Shares of stock in the Washington-Murry Township Ditch to the extent of 25,300 shares, the cost of which is not available. The average price of about 3000 shares sold the same year (1887) was 53.6 cents per share. Assuming 50 cents per share, it is estimated that this stock cost \$12,650.

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(4) Water burdens which entered as a part of the compensation paid by the Company for these water rights. On the Alameda Creek these aggregate 336,940 gallons per day. It is difficult to estimate at this time the equivalent to the cost of these burdens at that time. By obtaining these free deliveries of water, the land owner was relieved of the annual cost of maintaining and operating pumping plants. By assuming the burden of the free delivery of water, the Company was deprived of the sale of this water from its conduits. It is also burdened with the cost of maintenance and operation of that proportion of the structures used in this delivery represented by ratio between the extent of the burden and the capacity of same.

As noted in discussing San Mateo Creek, it is probable that steam engines were used exclusively for pumping plants, and these were undoubtedly used for pumping water in this region. Taking all these facts into consideration it seems to me that from 5 cents to 10 cents per 1000 gallons would be a fair measure of the cost price

of these water burdens. Taking a mean of $7\frac{1}{2}$ cents per 1000 gallons and capitalizing at the rate of 6 per cent, the equivalent of the cost price is estimated at \$153,700.

8825 The original outlay for the water rights of Alameda Creek, below Sunol dam including the foregoing estimates, is therefore at least as much as follows:

A. Cash payments for water rights of which we have record.....	\$1,109,850
B. Estimated cost of stream bed land between Niles and Sunol.....	62,000
C. Estimated cost of Riparian Rights below Niles, of which no record is available.....	4,640
D. Estimated cost of 25,300 shares of the Washington-Murry Township Ditch.....	12,650
E. Estimated cost equivalent for Water Burdens	153,700

Total Estimated Original Cost of Water Rights on Alameda Creek below Sunol	\$1,342,840
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LAKE MERCED:

The riparian rights to Lake Merced were covered by two purchases, different interests in the same water right. In 1868 the Clear Lake Water Company was paid \$150,000, and in 1872 Mr. Weaver was paid \$15,000 making a total of \$165,000.

8826 A summary of the original cost so far as ascertainable of the water rights of the various sources of supplies now in use by the Spring Valley Water Company is given in the following tabulations, the known actual cash outlay for a part of the rights being given separately from an estimate of an additional cash outlay for which no records are available, and an estimate of cost equivalent of the water burdens. These included expenditures below the points of diversion only:

ORIGINAL COST, SO FAR AS ASCERTAINABLE.

Source of Supply	Known Cash Outlay	Estimated Additional Cash Outlay	Estimated Cost Equivalent of Water Burdens
Pilarcitos	\$ 3,000	None	None
San Mateo	170,185	\$ 85,750	\$ 78,780
Alameda	1,109,850	79,290	153,700
Lake Merced	165,000	None	None
	\$1,448,035	\$165,040	\$232,480
Grand Total, \$1,845,555.			

ENHANCED VALUE OF LANDS:

If it were possible, the simplest way to find the value of a water right would be to determine the value of land with a water right and its value with its water right removed, the difference between these values being the value of the water right. Effort has been made along these lines but the results reached therefrom cannot be taken as entirely conclusive. We all know that almost anywhere in southern and central California agricultural lands to which water rights are attached are much more valuable than those to which no water rights are attached.

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There are numerous instances where land in the San Joaquin Valley which was worth \$25 per acre before irrigation rose to a value of \$150 per acre immediately upon the installation of irrigation works which would supply that land with water. The cost of the irrigation works usually ranged from \$15 to \$30 per acre, showing a net increase due to the attachment of water rights alone of about \$100 per acre.

The value of a water right for irrigation purposes is measured by the increased productivity of land with irrigation over that of a similar character without irrigation. Experiments which indicate such increased productivity were made by the University of California in co-operation with the U. S. Irrigation Investigation at the Agricultural Experimental Farm at Davis, California. These experiments cover a period of four years from 1910 to 1914, inclusive, and by reason of the location of Davis Farm and the character of its land, they are fair criteria for the north central part of California. The results of these experiments are published in Bulletin No. 1 of the Department of Engineering of the State of California. The data which is used in the following is given on page 18 of that bulletin.

The net profit per acre for alfalfa is given as \$22.09 on unirrigated land, and as \$39.00 on land irrigated to a total depth of 30 inches. As $2\frac{1}{2}$ acre feet per acre increased the net profit \$16.93, the yearly value for one second foot day would be \$13.55. As with storage the entire yearly yield could be conserved, we can figure on 365 second foot days less 25 per cent losses, or 274 second foot days net. The total value of the crop yearly per second foot would then be \$13.55 multiplied by 274 second foot days or \$3715. Capitalized at 6 per cent this gives the value to the crop of one second foot to be \$61,917 or \$95,500 per m.g.d.

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On barley the gross value of the crop per acre using 11.1 inches depth of water for irrigation is given as \$27.12. Deducting the given irrigating cost of \$2.75 per acre leaves \$24.37 as the amount to be compared to the gross value of the crop grown on unirrigated land, given as \$11.75. The increased return per acre due to the application of 11.1 acre inches of irrigating water per acre amounted to \$12.62. This makes the increased return per 24-hour second foot \$27.35, or multi-

plying by 274 as above, the yearly value to the crop per second foot is \$7,480. Capitalizing at 6 per cent, the value to the crop of one second foot is \$124,667 or \$192,000 per m.g.d.

8829 Similarly on wheat using 10.1 inches the comparable return was \$22.94 less \$2.52 irrigating cost, or \$20.42. This compared to a return of \$9.55 per acre on unirrigated land shows the increased return due to the application of 10.1 acre inches to the acre to be \$20.42 per acre. Computed and capitalized as above, the value to a crop of wheat of one second foot becomes \$117,900 or \$181,500 per m.g.d.

If from the above figures we compare unirrigated barley returning \$11.75 per acre gross with irrigated alfalfa using 30 inches of water and returning \$39.02 per acre net, we would show an increase in the net profit of at least \$30.00 per acre. This computed as before corresponds to a capitalized value to the crop of \$109,600 per second foot, or \$169,000 per m.g.d.

This last case is directly comparable to the conditions that prevail throughout the Sacramento and San Joaquin Valley, in that lands to which no water rights are attached are devoted almost wholly to grain farming, while the lands to which water rights are attached are largely devoted to the culture of alfalfa.

From the view point of increased productivity of the land due to the attachment of a water right, the value of water rights is worth from \$95,500 to \$169,000 per m.g.d.

In the data given in the foregoing provision has been made for the cost of water as well as all other charges. It is to be noted further that these figures are for water rights devoted to agricultural purposes, which are less productive, necessary and valuable than those which are devoted to domestic and other public uses.

VALUATION BY JUDGE FARRINGTON:

8830 In his decision of the rate case for 1903-4 Judge Farrington states that "the average daily amount of water used in San Francisco in 1903-4 was about 33 m.g.d." He places a value on these water rights at that time of \$2,100,000 or at the rate of about \$63,600 per m.g.d. Like other real property these water rights have enhanced in value materially since 1903-4.

SUMMARY:

Summarizing all the available data as given in the foregoing, we have the following:

1. The water rights under consideration are put to the highest possible use, and are of the highest rank in point of value.
2. It is impossible to use reproduction cost as a measure of their value.

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3. Data which will serve as a guide to determine the value of these water rights is at best meager.

4. Sale prices and values as given previously in this report reduced to the rate per m.g.d. and applied to 43.0 million gallons daily, which is the amount of the water right as of December, 1913, are as follows:

	Average per M. G. D.	Total for 43 M. G. D.	8831
Recent sales in this vicinity.....	\$103,000	\$4,429,000	
Sales around S. F. Bay prior to 1890.....	33,500	1,440,500	
Sales around S. F. Bay between 1890 and 1900.....	126,500	5,439,500	
Sales around S. F. Bay since 1900.....	102,500	4,407,500	
Sales of Comparable Water Rts. in Southern California	163,300	7,021,900	
Value of Irrigation Water Rts. in Southern California			
240 days	108,600	4,669,800	
Value of Gravity Irrigation Rts. in Santa Clara Valley			
—100 days	31,400	1,350,200	
Value of Pumping Irrigation Rts in Santa Clara Valley			
—100 days	46,900	2,016,700	
Value based on Productivity of Land with and without			
Water	132,000	5,676,000	
Valuation of 1903-4 by Judge Farrington.....	63,600	2,734,800	
Assessed Value of Alameda Water Rights.....		1,350,200	
Original cost of that portion of the Water Rights of			
the S. V. W. Co. as to which information is			
available		1,850,000	
Valuation by writer as of 1913.....	100,000	4,300,000	

Questioned by Master.

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My final conclusion is that the value of those water rights is \$100,000 per million gallons daily, or a total as of 1913 of \$4,300,000. That is a different quantity from Mr. Anderson's figure, but it is the same unit. I think the difference comes in the safe yield of the Peninsula system. He uses 19,000,000, and I use 19,500,000.

Mr. Dillman: The Livermore property was transferred to the Pacific Gas & Electric Co., on an agreed trade. It included the power rights of the Livermore Valley, and the water supply plant for the town of Livermore. In order to effect this trade it was necessary to go to the Railroad Commission for a permit. Payment for the property was made in common stock of the Pacific Gas & Electric Co., largely—I think entirely.

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Mr. Greene: I think you are wrong in that. I will remind you of what is said in the opinion of the case itself, by the Railroad Commission, in which it is stated that 1400 shares of the common stock of the Pacific Gas & Electric Co., at \$65 per share, or a total of \$91,000; a note for one year at 5%, \$51,000; outstanding bond issue assumed \$100,000.

Mr. Dillman: That sounds right to me.

The electric company bought the power business, which was a desirable thing for them in this trade. The Livermore Water & Power Co. bought current at wholesale rates for the whole country, the Livermore Valley, including Pleasanton and Livermore. They also furnished power for the operation of one of the Spring Valley plants near Pleasanton; the market for power was to be largely increased by the construction of the Calaveras Dam, and the Pacific Gas & Electric Co. desired to get into that business, and that was their reason for wanting to purchase this property. There was some evidence as to the rights of different parts of the property. The water property was entirely auxiliary to the power part of the plant. The finding of the Commission was to the effect that the trade would be allowed, but that these valuations would not be considered in any future application for rate making purposes. So that it cannot be said in that case at all that those water rights were sold for \$100,000 per million gallons. Besides that, the water rights are probably for a great deal more than a million gallons daily. The water rights claimed—and they are not contested up to date—are for the full claim of the Mocho Creek, which is a very large creek. While there has been no storage made, no doubt if storage were made, it could be made to produce many times a million gallons per day. A million gallons per day is about my estimate of the capacity of Positas Springs.

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Counsel for Plaintiff read the following from the opinion of the Railroad Commission, as bearing on Mr. Herrmann's statement:

"Pacific Gas & Electric Co. desires to pay for the property as follows:

1,400 shares of the common stock of Pacific Gas &	
Electric Company at \$65 per share	\$ 91,000.00
Note for one year at 5 per cent.....	51,000.00
Outstanding bond issue assumed.....	100,000.00
	<hr/>
Total	\$242,000.00

At the hearing, revised figures were presented, showing an estimated value of \$62,425 for the property devoted to the electrical part of the business of the company, and \$187,300 to the water business, making a total of \$249,725. A large portion of the valuation attributed to the water system consists of water rights, and the testimony shows that this company has purchased practically all of the riparian lands and riparian water rights to the remaining lands on the Mocho Creek, and against these lands and riparian rights the engineer for applicant puts a value of \$25,000. In addition the company owns the Positas Springs, which ownership carries with it a right to develop all of the water from a ranch of 377 acres, and it is testified that there is a pos-

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sible development from this source of one million gallons of water per day. Against this property the engineer places a value of \$75,000. The remaining \$87,300 is the value of the reservoir and distributing system of the Livermore Water & Power Co. While at the present time only the town of Livermore is supplied with water by this company, the evidence shows that the Pacific Gas & Electric Co. is securing a supply of good water, which will serve a much larger area by this purchase."

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Mr. Dillman: That accords with the facts.

Mr. Herrmann: In the amount of the purchase price, \$187,300, for the water business, as given in this decision, of that \$187,300, \$87,300 is for the value of reservoirs, distributing system, etc., leaving \$100,000 which can be only for water rights. That is my conclusion.

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ONE HUNDRED AND TWENTY-SECOND HEARING.

MARCH 23, 1916.

Witnesses: GEO. L. DILLMAN for Defendants.

GEO. G. ANDERSON for Plaintiff.

(Discussion among Counsel and the Master in relation to extract read at yesterday's hearing from the Railroad Commission's report with reference to the Livermore Water & Power Co.'s sale to the Pacific Gas & Electric Co., with particular reference to the fact that Mr. Herrmann used the facts of that case as a basis for his opinion of the water rights of one million gallons daily sold for \$100,000. The Master overruled the objection which he had formerly ruled favorably upon).

8839-8843

Witness: GEO. L. DILLMAN for Defendants.

Dillman

Questioned by Mr. Greene.

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Referring to the case of the Hayward Co. to buy, and of the San Lorenzo Water Co. to sell; my knowledge of the case is that the water rights transferred at Livermore very much exceeded one million gallons per day. The developed water rights at Livermore were about a million gallons per day, but the water rights that were transferred were all the rights of the Mocho Creek in addition to that, and there are a great deal more than a million gallons a day; there are several million gallons a day. The development was only for about a million gallons a day. The capacity of the plant is about a million gallons a day.

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The valuation of \$100,000 for those water rights was for the purpose of making a showing to the Railroad Commission that this trade

8847 was all right between the parties; that was the only purpose. It represented my idea of the valuation. The owners made the trade before I was consulted in the matter of valuation at all. I think they were satisfied with my opinion in the matter; if they were not, they did not express any dissent.

I testified that that was the valuation for transfer of the property from the owners to the Pacific Gas & Electric Co., and I think that testimony was correct.

CROSS EXAMINATION BY MR. SEARLS.

8848 At the time the transfer was made I did not know of any segregation of the properties and the water rights having been made between the parties. This segregation was made by me. It was not made on the basis of any information given to me by either of the parties as to their ideas of the value of the water rights, but I knew at the time what the terms of the trade were. There was no segregation of the value of the properties; it was the sale of all the business from one company to another company, and the principal part of the trade was the electric distribution business; the waterworks was a separate thing. It was a side issue in this trade, although the physical property, I presume, was about as great.

Anderson

Witness: GEO. G. ANDERSON for Plaintiff.

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CROSS EXAMINATION BY MR. SEARLS.

Yesterday I overlooked the fact that on page 4 of my report I said, considering that on Alameda Creek prior to 1913 the full yield had not been developed and put into service, but was utilized to the extent of 17,000,000 gallons daily, the value of water rights prior to 1913, in my judgment was \$3,940,000. I would place it in this way:

1907, the yield at Alameda, 16.9 million gallons; Peninsula, 19; Lake Merced, 3.4; total, 39.3 million gallons daily, which would give \$3,930,000.

1908 and 1909 are on the same basis.

In 1910 the Alameda yield was 17 million; the Peninsula 19; and Lake Merced 3.4; making a total of 39.4 million gallons daily, which would give a value of \$3,940,000.

1911 and 1912 would be, in my judgment, based on the same as 1910. That brings it up to 1913. In 1914 the yield would be 21 million gallons, or the same valuation for water rights as in 1913.

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I moved to California in 1914, but had not been in the State prior to that time very much. Except for the occasions which I have mentioned, I have not made any particular study of water rights in California. I have never bought or sold any water rights in this State.

Referring to page 3 of my Exhibit 172, where I say that the safe yield of the Alameda system is at least 21 million gallons per day at Sunol; it is my conclusion that the 21 million gallons would be a safe yield under the condition of dry years with pumping at Pleasanton from the system in its present condition. In 1912 and 1913 the maximum was 16.9 in February, 1912, and 20.1 in April, 1913. I understand they installed an extra line of pumps at Pleasanton in those years for the purpose of getting the maximum draft possible. My inference from the installation of these extra pumps would be that it was to increase the delivery through the pipe.

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Even with that extra line of pumps they did not succeed in getting more than 16 or 17 million gallons. I am placing 21 million gallons as the yield from the fact that that much has been delivered, and that the right matures to the amount that is being maintained. In my experience the measure of yield of a water right is the amount that it can maintain for some considerable period under the best circumstances. So that safe yield, as I have used it, would mean a yield over a period of years under the most favorable circumstances, and by gage also of the maximum quantity which has been diverted as a measure against the junior user. The figure of 21 million gallons might be taken in a period of long years and spread over that period; the safe yield would incorporate both the high and low. Even if there were no storage reservoirs in the Peninsula system, and the water were taken directly into the city distributing reservoirs, that would not alter my views as to what constitutes the safe yield of the system. The yield upon which the value of the right would be determined would be, in my judgment, on the sustained yield for some considerable period, as, for instance, a month. I think that would be the measure of the yield, and the measure of the right.

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I am valuing the maximum yield which the company has sustained for as much as a month at a time. I thought that was clearly set out on page 3, that the average maximum monthly diversion was shown to be as in these various months, and had reached 21 million gallons in the year 1913. This quantity of 21 million gallons represents the yielding capacity of the pipes at Alameda Creek. I have not made any segregation between the company's right to the flow of Alameda Creek, and its right to pump water at the Pleasanton wells. I have taken it as the yield at that point, and in so taking it, I am valuing complete water rights at the point of diversion, and that is the point of diversion. That includes the valuation of all the water that can be yielded at that point under that right.

If they did not pump the water at Pleasanton, it would come to Sunol, not perhaps in the same regulated way, but it would come to Sunol. The right which I have valued at Sunol includes the right to continue the pumping of the water at Pleasanton. In other words, for

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convenience, I valued the water at Sunol where it is actually diverted into the pipe, although that portion of it which is pumped at Pleasanton is actually carried to Sunol through conduits of the company, and simply transferred to the Alameda pipe line at that point; in other words, the pipe being an artificial channel in place of a natural channel which the water would otherwise flow down. I think the water would flow down otherwise during the year round even if there were no wells at Pleasanton. It might be true that in summer the Laguna Creek would practically dry up, and that there is a very heavy flow in winter, but the fact that the underground reservoir is there, in that case gives it better facility and better dependable yield. The 21 million gallons at Sunol also includes the water that is delivered to the Niles Cone riparian land in accordance with the obligations of the company, and is measured, and as I understand the quantity is given at the Belmont Station, so that the quantity given under the burdens in the contracts with the riparian rights owners on Alameda Creek is practically out of that; at the same time I have made a deduction there of one million gallons per day from the total which covers the total under these contracts and other services on the Peninsula side. These quantities were taken from the Exhibit 12-U, which, as I understand it, records the quantity coming into Belmont, which would be actually less than the quantity at Sunol by the quantity furnished to these riparian tract owners.

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Mr. Herrmann: The 21 million gallons is the pipe capacity, or the amount of water the pipe will carry. It does not make any difference where you measure it. The 21 million gallons today is the capacity of that pipe line with the booster pump at Ravenswood working; the reason for the difference between 1912 and 1913 is the fact that the booster pump at Ravenswood was not built, and the pipe capacity at that time was not 21 million gallons daily. That is the real reason for the difference. The readings for 1907, 1908 and 1909, 16.9 million, and for 1910 and 1911, 17 million, were diversions without boosting. The 21 million is the capacity of the pipe line with the booster, and the booster was not in operation before 1913. I rather think that you could have gotten 20 millions without the development at Pleasanton and the G line wells, but I am not prepared to say whether that is true or not. I rather think so.

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CROSS EXAMINATION BY MR. SEARLS.

Mr. Anderson: I accepted the discharges shown in Exhibit 12-U, and from that I made the allowance of a million gallons per day as the quantity supplied to these various riparian contracts, and other obligations—on the Peninsula principally; the obligations, if I remember rightly, in the Alameda Creek riparian tract contracts amount to something like 340,000 gallons per day.

Referring to Mr. Sharon's statement: "The records showing the water draft from the Alameda system are from the Brightside wiers. I believe that most of all the record to the Alameda system are taken from the Brightside wiers, and that where we have not the record at Brightside wiers, we used the pump displacement at the Belmont Pump, indicating the quantity drawn from the Alameda system. This would be subject to deduction as to slippage, but what the normal allowance for slipping of pumps, such as the Belmont Pumps is, I do not know positively; possibly 4 or 5 percent should be deducted for slippage. Measurements at Brightside wiers would include water distributed between Brightside wiers and distributing centers of San Francisco to suburban consumers, and would also include waters wasted at the Niles Screen House. I do not know that the waste water at the Niles Screen House is very considerable at certain seasons of the year, but think the waste occurs there when they are making changes in the quantity of water that is required at the Belmont Pump. I do not know of any record being kept as to the waste at Niles. Waste is water wasted from the top of screen tank in flowing down into the creek. I have seen waste there myself, but it was due to a change in the operations of the quantity of water that was actually wanted at Belmont; the regulation takes place at the Sunol Dam.

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"Other than deductions for the Belmont Pump slippage, waste at Brightside and distribution to suburban consumers, there are no other to my knowledge."

If that were true, the water right which I am valuing here includes the wastage at the Niles Screen Tank, and the slippage at the Belmont Pump, but I have made that deduction for the amount furnished consumers. I have not made any deduction for wastage at Niles, but I think that million gallons would cover that. I have no recollection of seeing the water wasting at Niles.

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It is my idea that the water right to the company should be measured by the maximum sustained yield for one month, especially as the average withdrawals may not indicate the capacity of the water right itself, but may indicate much more likely the requirements and the demand at the time. My sustained monthly diversions in excess of 20 million gallons have occurred only during the years 1913, 1914, and 1915.

Taking the Peninsula sources; the record there is the record of the company which I went over in 1912, going as far back as any records existed of the San Andres, the Pilarcitos, and the Crystal Springs Reservoirs, taking into consideration all of the facts, the inflow and the outflow, to and from the reservoirs, the drafts made upon the system for the city, and my conclusion then was that a sustained draft of 19 million gallons would be the result. That was embodied in a study

8869 I made, and incorporated in the Future Supply for San Francisco, in 1912. If I remember rightly, those records go from the beginning, somewhere about 1872, I think. I think I took the reservoirs as they actually developed. Your reservoir is built for the purpose of accumulating the flood waters of the streams; my analysis takes into consideration that fact.

8870 I don't think that I made any assumption that the reservoirs would have to be full at the beginning, but taking the first year, and taking the draft out of the reservoir, and the amount of water that flows into the reservoir and that flowed out, and going through the history of each reservoir through all the years in that way, and spreading the average draft for the whole period, it resulted in 19 million gallons per day. My impression is that I did not take any theoretical consideration of the reservoirs being full at the start.

Referring to page 4 of my Exhibit 172; the 17 million gallons developed on Alameda Creek prior to 1913 includes the Pleasanton water that had been developed prior to that date. In the preceding paragraph I say, from the total yield deductions have to be made for the total obligations of approximately one million gallons. At the present I am unable to make any segregation as to quantities between Sunol and Pleasanton.

8871 In fixing the value upon these water rights, I gave the value shown by the Southern California Mutual Water Districts the principal weight, in comparison with the values that developed, and also from the less full information in Santa Clara Valley. The crops grown on the Southern California land covered by the Mutual Water Districts, are citrus fruits, largely. In 1914 I found some evidences of a number of these sections returning to alfalfa productions. To a very considerable extent these lands are given over to citrus fruit culture, but there were some other crops. I remember going over the Riverside System, and being told by the manager of the Riverside Ditch that quite a number of the owners of orchards had taken out considerable part of the trees, and were going back to alfalfa.

8872 The demand for water in and around Denver, for irrigation purposes, exceeds the available supply. That means that the supply is limited for any purpose in the vicinity of Denver. I made a valuation of the water rights of the Denver Union Water Co. in the recent rate suit there, and I testified that I considered the value of the water rights used for irrigation purposes in that vicinity to be \$60 per acre foot, which would correspond, I think, to about \$72,000 per million gallons. The Master in that case found \$55 per acre foot. The rights that I valued at Denver were adjudicated rights.

Referring to page 6, Exhibit 172: In that connection, where I speak of domestic use as being the highest use for water; the highest use and highest value are synonymous terms. When I say there that

the highest use is domestic use, and the next use irrigation, my theory of value would then be that whatever value obtains for the highest development of water applied for irrigation uses, would have a higher value for domestic uses, because the water required for domestic use would have to rank at least as high in right on the stream as the best irrigation right. All other things being obtained, if any corporation were entering upon the project of supplying water for domestic purposes to a city, they would seek for a water right, and find it in the best irrigation right in the district; I mean best in the sense of getting the earliest priority, so as to be assured of the most certain supply, which naturally the oldest irrigation rights only possess; they would, therefore, pay the valuation of the oldest and best irrigation rights, and in all probability pay more.

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The highest use, as it is ordinarily stated, refers to the fact that the Government has vested municipalities and public utility companies with the right to take water rights for domestic purposes for condemnation in preference to all other purposes. I did not, in the direct sense, draw from that fact the conclusion that the Government also contended that that right should be capitalized in excess of the value which would be attached to other purposes, but the domestic use of water being vested with that power—condemnation by eminent domain or otherwise, gives the power of taking away the water used for irrigation purposes to domestic needs, if the emergency demands it, but it must be by compensation of these irrigation use rights which had been taken for that purpose. The compensation would be measured by the value for irrigation use, plus some element of value for the loss for the time being. The owner of an irrigation right would not ordinarily sacrifice his good right for merely the market value if it was to be taken away from him and devoted to a higher use. I mean, in other words, a severance damage.

When we have to acquire such rights for domestic use, we usually have to pay more than the current market value for similar irrigation rights, either in condemnation proceedings, or in private transactions; that has been my experience in Colorado. You would naturally seek the oldest irrigation right, so as to be assured at all times of a continuous supply, and the owner of such old irrigation right would usually expect to be paid more than the current market value of such right. There is also the feature comes in there that the irrigation right does not operate more than a certain period of a year, where the domestic right would have to be, necessarily, continuous and full. If you were operating in a country where there were no current market values for the oldest irrigation right, you would measure the value of the right that you acquired for domestic uses by the best method you could find of ascertaining it. You would have, as in this case you have a value for irrigation use, and after that any element of sever-

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ance that might exist; of course, I have not done that in this case, nor was it done in the Denver case. I took in the Denver case the value of the domestic water rights of the Denver Union Water Co. as a foundation, as evidence of the current market value for the best irrigation and rights in that locality.

8876 The history of the Spring Valley Water Co. apparently shows that they bought out the company lock, stock and barrel, but you may not be required to buy them out lock, stock and barrel, as for instance, take the case I mentioned, in the acquirement of a water right for domestic purposes for the City of Greeley, Colorado, only a limited right was acquired, 5 million gallons per day, practically $7\frac{1}{2}$ cubic feet per second; that is relatively a small appropriation right that was acquired from one owner. In stating that the domestic use is the most valuable use, I had in mind most largely that it was of a paramount nature, and therefore would be more valuable for the reasons I have already given; it is higher than irrigation purposes, which is perhaps the next highest. I did not have in mind that it was more profitable than the irrigation use; in that connection, the element of profit has no bearing on the question of value.

8877 "Duarte Mutual, structure value, miner's inch, \$400"; that was based upon an estimate made by me of \$50 per share of the surrounding circumstances, lacking all data from any source as to their value. I asked the secretary as much as I possibly could of the values incorporated there. I also made inquiries of Mr. Tait, who was the local agent of the United States Department of Agriculture there, who was very familiar with all these ditches in that section, and I could find no data. My estimate was based upon information given me by these people, and upon the general average investment in such properties per share. I did not go out and make any detailed appraisement of the works. I made a notation there at the time that an estimate of the present value of the system has not been obtained from any source other than myself. The total probable cost of the system was given by William Ham Hall, State Engineer, in 1888, as \$35,245. Since that time pumping plants have been added. I make the notation, \$50 per acre, or per share, however, as a liberal allowance for the system there, 1,259 shares issued, but in placing it at \$50 per share, I thought the estimate was liberal and fair. My information as to the share value in that case was obtained from the secretary of the company. I did not make any personal examination of the records of sales.

8878 In the case of the Covina Company, information was furnished by Mr. Edwards, the secretary, both as to the structural value and the share value; the structural value showed a deficit per share of 20 cents; a deficit in the whole property of about \$2,000; there were 10,000 shares issued, and that represents a deficit per share of 20 cents. That is to say, the share has to still pay that, and it has to be

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added to the obligations. It is a liability of the company. The statement in 1913 was as follows:

Resources \$362,885; San Gabriel River purchase, \$66,500; a total of \$296,385. Bonds and bills payable, \$298,409; deficit, \$2,024; deficit per share, 20 cents.

The water is conveyed, if I remember correctly, both from the San Gabriel River and by wells. There are 19 shares per miner's inch; that is, the miner's inch applies to the 19 shares; the liability on each share is 20 cents, so that, per miner's inch the liability per inch is \$3.80, which I placed at \$4 to round off the figure. There were 10,000 shares, or 19 per miner's inch, which would give about 500 miner's inches that the company owned. The total liability would be about \$2,000 on the whole share holding. My method is to take the structural value and subtract it from the share value per miner's inch, and get at the net value per miner's inch when the structural value is an asset and not a liability. There is a deficit, or an obligation to pay on each share, in the statement I have shown you; if the market value is \$80 per share, and in addition to that there is an obligation of 20 cents per share, there is a market value per share of \$80.20. That is your share value, as I read it. I have not charged up that deficit of 20 cents per share to the structures instead of the water right, but even if I have, it must reflect back into the net value.

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If you were to assume that these structures had cost \$20,000 originally, and that they came out at \$2,000 with my process of reasoning, I do not think that that would mean that the structures had depreciated in value from \$20,000 to \$2,000 under my theory; I do not think it has any bearing upon that. Take the Duarte condition, the share value is \$300 per share; there are 8 shares per miner's inch; that is a gross value of \$2,400 per miner's inch. The structure value, an asset in that case, is \$400 per miner's inch, and leads you to a net value per miner's inch of \$2,000. In this Covina case you have a share value of \$80. There are 19 shares to an inch, that is \$1,500 per miner's inch, and in addition to that you have an obligation per share of 20 cents, or \$3.80, or \$4 per inch, which must be added. This deficit is caused because their resources are valued at \$362,885.15, from which the San Gabriel River purchase of 66,000 is deducted, giving you total resources of \$296,000; against that there are bonds and bills payable of \$298,000, so there is a deficit left of \$2,000. They have not paid for all their system, so that if as is the fact their share value is \$80, with that obligation in addition it is \$80.20.

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Questioned by Master.

The column "Value per million gallons daily" is converted by multiplication of net value per miner's inch by 77.4, which is the number of miner's inches in million gallons daily.

CROSS EXAMINATION BY MR. SEARLS.

You ought to get the same result if you add to your share values the total bonded indebtedness per share, and subtract the actual value of the structures, assuming that they have been paid for per share.

8881 The Del Monte situation was given to me by the secretary, Mr. Pitz, the market value of the shares being \$14. There were 100 shares per miner's inch, \$1,400; this was the gross value of the miner's inch. Then there was a surplus per share of \$1.31, which would make \$131 per miner's inch, which, deducted from the \$1,400 would give the net value of the miner's inch, the net value of the water, the \$131 practically being the structure value per miner's inch. My idea of structural value all through here is obtained by means of the company's financial statements as to resources and liabilities. All these structure values are based upon the financial statement at the time that I made that investigation, which was in the spring of 1914. The assets of the Del Monte Company are given as water, developed rights, buildings, pipe line, real estate, deep well pumps, iron pipe, office supplies, operating supplies, fuel, tools, and cash in bank; and the liabilities, capital stock, bills payable
8882 only; so there was evidently no outstanding bonds. There were some bills payable, \$23,000. I do not think that these companies write off their plant, but I am not sure of that.

The Canyon Water Company information was also obtained from the secretary of the company, who stated that the company had no record of the value of its system, which consisted of 7 miles of 16 and 12-inch pipe. He considered that 90% of the present market value of the stock is for the water rights.

San Antonio and Bear Valley; that was given to me by the general manager of the company. The market value there per share is \$325, with a surplus of \$13.30. With the San Antonio Company the annual report shows a structure value per miner's inch of about \$80. I had the manager's statement and the company's report
8883 at the time, namely, 1914. The structure cost I did not find separated; it simply says here "Assets, \$638,819, liabilities \$558,000", showing a surplus of \$80,000. There were 6,064 shares, \$13 a share, and 6 shares per miner's inch would give you the \$80.

I have no value for structures at all in the Temescal Water Co. I have in my notes here an estimate of the present value of the system had not been obtained; a bond issue circular, under date of 1913, gives the value of the system as \$412,000; the 1913 annual statement of the company shows outstanding bonds to the extent of \$448,000. The information was given by a director, a former president of the company. The conclusion apparently is that if they have a system, it is not paid for, but in spite of that the market value of the shares is

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\$125. In the Gage Canal the value per miner's inch is given only without the surplus items, which I was not able to obtain at that time, and my information at that time was given to me from the chief engineer of the company, Mr. Milne. I did not confer with Mr. Lippincott in making up this list.

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I do not know how many mutual water companies there are in Southern California, but those are all that I could obtain, or the records of which were in such shape that it seemed to me I could use and derive any real information from. I did not go into Ventura County at all, or in to the lower parts of any of the valleys down there. In this section of Southern California with which I am familiar, around Redlands, Riverside, Pomona, Los Angeles, Ontario, and Santa Barbara, I do not think that they raise crops like alfalfa, beets, or crops that are similar to those raised in the Santa Clara Valley and on the Niles Cone. I had some values at \$1,000 as the selling price of citrus lands down there, and I had some values at \$2,500, and at the time I was making this investigation I was offered some citrus bearing lands for about \$600 at Riverside. It was the managers of the Gage Canal and the Riverside Company who made that kind of an offer to me, but that was following the freeze that they had down in that country.

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I think I relied some upon Government Bulletins for information as to some of these companies. I had some interviews with Mr. Tait, the local agent of the Government there, and he was very helpful in giving me the location and the general conditions of the various companies which operated in that section.

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The Montecito sale, which I say is not comparable, is on page 9 of the report, where some little time before I was there in 1914 one party had purchased a quantity of water there for \$4,000 per miner's inch, or \$309,000 per million gallons. I did not use that.

The wealthy man who has a little hacienda of his own might be willing to pay considerable to get some water, but that would not be a fair basis to value 20 million gallons of water upon. I have since learned of one similar sale in Santa Barbara which has been made at a larger price than that. There, of course, the water supply is very limited, and there was an attractive residence district being built up there; while I have not regarded it in that way, there is a good deal of similarity in my mind between the Montecito conditions and the conditions surrounding San Mateo Creek immediately adjoining San Mateo. In comparing that sale, you would have to compare it with the price that somebody having a villa up on one of these hills here would pay to get water enough up there for his domestic use, and not only that, the settlement which is evidently growing and has grown in the immediate vicinity of San Mateo is practically on similar lines to that around Montecito, and water values are quite likely to be on the same general average. I am not

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able to say whether there is a large demand for water at Montecito at this price. I am not suggesting that if one man in a community would pay such prices for water that it would necessarily follow that the whole community would pay it, nor do I consider it altogether as bearing on market values.

8888 Referring to page 11, Exhibit 172; the principal reason that irrigation water does not serve for 365 days in a year is the fact that the farmer does not want it for the rest of the time. I think I go on to say that the service for irrigation purposes is based upon a period of 240 days, or at the most 270 days. There is quite a point in saying that because people drink water 365 days in the year, and only need it for irrigation 270 days in the year, that a domestic water supply is more valuable for that reason; there is an expanded use there, and if that expanded use were employed in irrigation purposes, there would be an expanded value; that necessarily follows. I do not mean that the irrigationist would take 29 million gallons and use them all up in 270 days, and then there would not be any waste; or even that could be done; if the supply for the balance of the period, 90 or 120 days, could be conserved and applied during the 270 days, then you would get the greater value which would be reflected in the value for domestic purposes calling for continuous service during the 365 days. If you did that you would probably have to go to the expense of building a storage system, but your storage system for that time would not absorb all the additional value. I do not think, as an original proposition, that it would be a correct assumption to say that if it did not absorb it, your stored water would be more valuable, and if it did not absorb it it would not.

8889 In the Bear Valley they have stored water for irrigation use. It is not a general practice down there to store water for irrigation. I think there are probably physical reasons why it is not developed at this time. In my general practice in Colorado and elsewhere it is the feature.

8890 I don't know of conditions that would warrant the construction of reservoirs for storing the water if it were not used in the additional 90 or 125 days. I should think that all of the water obtainable in that country during any time of the year would be of value for irrigation purposes, stored or otherwise. It is not necessarily my conclusion that it would not be economical to store it because it would cost too much. Other reasons would be that the industry has not been developed up to that point at this time. It is perfectly true in Colorado, for instance, they did not think of conserving water; now they do, everything that they can find.

I would not make a statement so broad as to say that the use of water for irrigation in Southern California is still in its infancy, but it does seem to me that with the conditions there as they are apparently from a superficial examination, that all the water that

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can be made available should be made available, and generally speaking, I think irrigation development is in its infancy generally.

On page 13 of my exhibit I quote from Bulletin No. 158, Department of Agriculture, and say that it is estimated there that the cost of plant to irrigate 50 acres would be \$2,000, or \$40 an acre. The statement which appears on page 91 of the Bulletin; "In a plant "which costs \$2,000, and irrigated 50 acres, the fixed charges would "amount to \$260 or \$5.20 per acre irrigated, which would increase "the average cost from \$4.96 to \$10.16 per acre", might be a hypothetical question that it does cost \$40 per acre, but in the consideration of the general subject and use in that connection, I think it is a perfectly warranted conclusion that that is the writer's opinion. He assumes a certain cost there, and says if it costs that much the fixed charges will amount to that much; he would not assume it unless he had made some investigation to justify some such assumption in that treatment. I do not think that \$40 per acre with pumping plants would be very much in excess of the average cost of irrigation works.

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It occurred to me during the recess that there might be some misapprehension as to what I intended to convey as to what I included in the valuation of that water right at Sunol and Pleasanton. I did include in the valuation of the water right at that point the diversion at Pleasanton, but I did not include in that any water right value as against the upstream land owners; that I took to be a purely legal right which would be converted into a right to object to the depletion of the water plane, the reduction of the water plane, which is an entirely different matter in my mind, and comparable entirely to the reservoir situation in the Peninsula, the one case being a surface reservoir, and the other an underground reservoir.

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I did not say at all that I was valuing a complete water right as against the world, except the people that live above it; the difference is material in my mind. As I say, the further right of the upstream water to object to the depletion of the water area is exactly similar and comparable to a surface reservoir, the value there being of storage; in the one case the storage above ground, and in the other the storage below ground. I don't think that any difficulty exists at that point with upstream owners, so far as the water which has been diverted is concerned. As I conceive it, they have no right to object to that, that diversion has been made of all water coming to that point.

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It may be true that the land owners of the Livermore Valley have formed a district and threatened litigation for the last year or two there, but that is again a question of storage, and the reduction of the surface of the storage reservoir. What I mean by storage is that it amounts to the question of a right of these overlying land owners to restrain the Spring Valley Water Co. from diverting

8894 enough water from beneath their land to lower the plane; that is a question of damages, and may be avoided by other means than a law suit; that is, by the purchase of additional lands. In the case of an appropriator on the Arroyo Valle Creek, somewhere above the point that the Spring Valley owns, I should think there, that the Spring Valley Water Co., having a right to divert at Sunol, that that would come in conflict with any such right. That is where they divert the water from the channel at Pleasanton, but they have the right as against all downstream owners to do that, as I see it. What I value is the right as against downstream owners entirely, and the rights as I see them at Sunol or Pleasanton are good as against all the downstream land owners. The rights in Southern California I used as a basis of comparison as to values, assuming that these various companies have the right to divert these waters, which they undoubtedly do. I think the projected Arroyo Valle diversion would undoubtedly come in conflict with the right of diversion at Sunol. Taking the right of any overlying land owner to pump water to divert it is a different proposition of reducing the water plane of the land. I see a distinction there, and it is comparable to the reservoir situation.

8895 When I take as a basis for comparative values complete water rights, good as against everybody, upstream and downstream, and apply it to Spring Valley rights, I think I am not inconsistent, for the reason that the values elsewhere arrived at are of the values for the diversion of water which the Spring Valley Co. owns at this particular point. There was no suggestion made to me that the argument might furnish a basis for arguing that the Pleasanton lands should be excluded; I have a very definite opinion as to that, and a definite conclusion as to what I had been valuing in these considerations.

You asked me, Mr. Searls, on what basis I had estimated the yield on the Peninsula sources, and whether I had started on the assumption that the reservoirs were full at the beginning. In the case of the Crystal Springs Reservoir, I went back as far as the records were obtainable, and I find, starting with the beginning of the year 1890, there was actually in storage in Crystal Springs Reservoir at that time 7,196 million gallons; the capacity of the reservoir is 23,500 million gallons. At San Andres the record extends back to 1871. The storage was then 1,120 million gallons. The capacity of the reservoir is 6,229 million gallons. At Pilarcitos the record extends back to 1867; the storage at the beginning of that year was 414 million gallons, and the capacity was 1,083 million gallons. I took these records as I found them as far as they extended back, and from that time forward I found the quantity of inflow and outflow each year, and the draft made upon them, and on that found the conclusion that 19 million gallons could be maintained throughout the period.

This is a complete history of the water flow into the Crystal Springs Reservoir from 1890 to the present time. I made this analysis in 1912 so that it goes to the end of 1911. I did not avoid, nor did I omit the dry years of 1912 and 1913. My report was completed during 1912, and I had only the records up to the end of 1911; I am pretty confident, however, the statement can be made that even including those dry years, the average safe draft would have been maintained, because, for instance, in Crystal Springs Reservoir, that was continued up to 1912, and on July 1, 1912, there was in storage in the reservoir 19,000 million gallons; in San Andres at the end of 1911 there were 6,230 million gallons, practically a full reservoir; in Pilarcitos at the end of 1911 there was a full reservoir.

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In order to get the 19 million gallons safe draft, there is an annual draft of 9.8 million gallons from Crystal Springs; on July 1, 1912, there was in storage in Crystal Springs 4,713 million gallons; the draft of 9.8 per annum would amount to 3,757 million gallons, so that there was over a year's storage accumulated on that draft; in other words, if no inflow occurred at all into Crystal Springs during that year, it would have maintained the safe draft, and left about 1,200 million gallons in storage on the first of July, 1913.

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In San Andres at the end of 1911 there was a full reservoir; the amount of draft on that was $5\frac{1}{2}$ million gallons per day, a total of 2,007 million gallons for the year, so there was in storage at the end of 1911, in San Andres, a three years' supply on this draft.

At Pilarcitos at the end of 1911 there was 1083 million gallons in storage; the estimated draft on that is 1,095 million gallons per annum, so that there was a year's storage there. So that the three reservoirs would have carried over a period of the continued draft of at least a year, with no inflow into any one of them. The Crystal Springs Reservoir goes to the first of July, 1912, San Andres to the end of 1911, and Pilarcitos to the end of 1911, in this report. If this report had been carried through 1912, I would not expect the draft to be considerably heavier, and the inflow considerably lighter on account of that dry year. As I say, you would have maintained the average draft for that year, the following year. That would not depend on the rainfall; from your storage alone at the end of these periods you could have maintained that draft of 19 million gallons on those three reservoirs for that year—for a year and a half, actually, on Crystal Springs, without any inflow at all.

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At the end of July, 1912, in Crystal Springs Reservoir alone, you have a storage equivalent to an ability to carry you over a year and a half on an estimated draft, without any addition or accretion from inflow at all, from rainfall. At San Andres you have three years' supply. At Pilarcitos you have just one year's supply. So that at one reservoir we have accumulated storage at the end of that time for a year and a half in advance; at San Andres we have three years'

8899 supply, and at Pilarcitos one year's supply, so you could maintain that draft of 19 million gallons for probably a year and a half without any accretion at all in any of them from rainfall, and that is because of the storage. The reservoirs undoubtedly would be very much lower at the end of the year and a half, but that is the function of reservoirs, to carry you over a period of low rainfall. I am entitled to take as a measure of my water right the storage. The 19 million gallons out, is the result of the regulation of the flow of the stream by the reservoirs, which is their function. In my safe yield, 19 million gallons, I have included the storage right, which was a period of several seasons, and not merely a feasible storage; it is the result of the regulation by the stream flow of these reservoirs.

8900 If you value the reservoir as a reservoir for storage purposes, and then value the storage rights on the stream, you are not duplicating the valuation, in my estimate, at all; you are valuing the right to divert water below your reservoir. I take the view that the extinguishment of the rights of riparian owners below the point of the dam, gives you that right, and all that is being valued in this case in the water right is that power to divert at the outlet of your reservoir. It is my assumption that the law of this state gives a riparian owner the right to assert a riparian right in the extraordinary freshet waters of the stream.

If, on December 31, 1913, the Spring Valley emptied its reservoirs and let the water go downstream, the people could use it on their own lands, as I understand the riparian doctrine, in the relation that these lands bore to all the riparian lands on the stream, and they would have to take the water flow as it came. As a practical proposition I think it is a physical impossibility for a riparian owner to utilize the flood waters of these Coast streams without storage, and if he could not take it and use it, his right would not be worth very much.

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Referring to the San Antonio Water Company; in the 1913 statement the assets were stated at \$2,344,709, and those assets included an item of water rights and treasury stock. I took out the treasury stock, \$893,600, water rights \$812,290, a total of \$1,705,890, which leaves a balance of \$638,819. Against that I consider the liabilities, bonds, scrip, etc., which totaled in that statement of 1913, \$588,144, leaving a surplus in that year of \$80,675. That surplus, divided by 6,064 shares, gave \$13.30 per share, which was the share value of all the values in the company other than the water right. The market value of a share at that time was stated at \$325; taking out the value of all other assets but the water, which is \$13.30, leaves you a water right value per share of \$311.70. As there are six shares per miner's inch, the water right value per miner's inch is \$1,870. I went over that carefully in that particular instance with the secretary of

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the company, and he approved the method, and said that that was the understanding the share holders had of their values.

The \$144,000 per million gallons daily for water rights is the result of multiplying 1,870, the unit value of the miner's inch, by 77.4. \$812,290, divided by 6,064 shares, would be \$134 per share, and there are six shares to the inch, and that would give \$804 per miner's inch. The bills payable may represent operating expenses, but that, of course, would apply to other assets than water rights value, and the value of the right in the share, and it all accounted against the capital investment. .

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I was going to make the suggestion that \$804 per miner's inch in the water right, put down as \$812,290, may be in that case only the cost of that, and not at all representative of the market value at that time. I don't know, as a matter of fact, whether it was or not, but my best authority on that is, in going over the statement in this way, and submitting it to the officers of the company, it was their judgment that it was a perfectly correct analysis. In that case the particular value of the share was \$100, and the market value in 1913 was \$325. I think that it is not possible that a part of the profit expectant from the land may not have been reflected in the price that people are willing to pay per share for the water which makes those profits possible; it would be an unusual experience with me in other countries where I have operated in irrigation works. The price the people are willing to pay for shares in water systems, in my judgment and my experience, is based upon the judgment of men who are in that business for the purpose of profit, and they have gauged the value of these by the actual performance of the water rights. That would, to a considerable extent, follow after the stock was issued, where men who are accustomed to that industry are thoroughly familiar with the value of water as well as of the value of land, and where a sale of land attaches to it, the sale of the water ditch stops; the knowledge of the value of one is just as well known as the value of the other.

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Referring to page 14, Exhibit 172, my figure of \$167,709; that is not the cost of the structures necessary for pumping, plus the capitalized operation costs. I have added to that the \$4.60 which I obtained by taking 13%, being interest and depreciation on costs of my pumping plant, and then I got \$8.98 per acre foot as the cost of the pumping per year, and that is equivalent to an annual cost of \$10,062 per million gallons daily the cost of pumping. I capitalized that at 6%, and got a value of \$167,709. In that \$8.98 per acre foot you have the total cost of the application of the water to the land, and that capitalized is the value of that function. The \$8.98 is the total cost of that water for that land, the total rental value. It is not the maximum rental, as I think you will find one or two cases of \$12 and \$13 per acre foot. That is the cost to the owner

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8906 of such a plant for that application of water per acre foot, which is the cost to him of getting that quantity of water on his land to produce crops. That is what it costs him each year, and he is willing to incur that cost because it means an equivalent return to him. That to him is all the cost of his water. He goes through all that function himself, and that is its cost to him; it is equivalent to a return. If the same man, instead of applying the water that he does pump at that cost, rents it to a neighbor, he will charge him that much, or more. He would be charging his neighbor the actual cost. The renter pays the return on the water right as the price of his water, and that, therefore, is the value of that service.

Questioned by Master.

If instead of having pumping machinery and a pumping expense, the water gushed out of the hill, then his rent for water would be nothing, but the position is that it actually does cost him that amount of money, which, capitalized at 6% indicates that it is worth that for the service which it renders him.

CROSS EXAMINATION BY MR. SEARLS.

8907 Assume that I owned an acre foot of water which you wanted to rent, and that you paid me \$8.98 per acre foot for that water; isn't that water worth to me what it is reasonably worth at a reasonable capitalization? My position is in the consideration of this value, that the man who can afford to pay that much gets his return from the service; that service is worth to him \$8.98 an acre foot, which, transferred into million gallons per day for a year, gives you that return in the year, and capitalized at that rate, is worth that amount of money as a rate.

8908 The value of the water service is exactly a water right, in my opinion, as represented by the \$167,000.

8909 Referring to page 16 of my statement; the figure of \$31,442 is taken from page 83 of Bulletin 158, where it is stated under the heading "Statler Ditch surplus water", etc., in the year 1904, \$15 per day of 24 hours, of a head estimated to contain 225 miner's inches—and taking that rate of return, and going through the same process, I get \$31,442 per million gallons. That includes a return to the man who sold the water upon his ditches and diversion works, and a capitalized cost of operation, and it is also the value which the renter of that water places upon that service. The man is, and is not, earning a return on his whole business; this price is paid for surplus water sold to outsiders in excess of what the stockholders in the ditches pay; that is to say, if there is such excess water, they rent it out at that price. I think the analysis goes on to show that the period in which they got this water was from 2 to 115 days, the share-holders themselves, so there is not very much chance or probability of the outsider getting much of a service, yet for that kind of

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service they are willing to pay these rentals. So far as the man who owns the water and rents is concerned, it is a little extra profit that he makes out of the ditch.

The sales at Los Gatos were considered by me as simply corroborative of the other values, and I eliminated from that consideration the two last rights mentioned at the high values. I think it is fair to value 20 million gallons, using that as not exactly a yardstick, but as an illustration.

The conditions which may govern the value of a small water right may not be applicable to those of a very large water right. On the whole, I should think these large water rights would be likely to be at a higher value under certain circumstances; in other words, that is only one of the conditions to be considered.

In the increment in land value due to the attachment of water rights, you come to the side of the man who pays the rent for the water, and I am trying to see what it is worth to him. In this particular consideration of it, the increment in land value, I have tried to show what the additional value of the land would be with that service rendered.

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In Southern California, taking the bulk of the land in these districts that I have described, the land would not have very much productive value without any water right. It is practically recognized in Southern California that there must be irrigation in order to effect any return from agricultural land in that vicinity, but even under those conditions there always does attach to raw lands some nominal value.

I would not think that Santa Clara Valley land had very much agricultural value, it apparently does have to some extent, without additional water. The distinction in the Santa Clara Valley is not so clearly defined between raw land value and value of land with water attached only. It is probably true that the farmers would be raising hay and grain on these lands instead of alfalfa and prunes, and I said in that connection, "It is found that the distinction is "not so sharply defined as in districts where irrigation is entirely "relied upon. Farming can be conducted without irrigation, and "raw land without water supply has some element of residential "value attached." That is the statement I make.

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On most of these Southern California lands it would hardly be possible to raise any crops that would amount to anything, without water, so that when we come to compare the two, we must take into account the fact that there would be an agricultural return from the lands without any water, and that there probably would be a greater agricultural return with the water. The element that should be capitalized, if any should be capitalized, is the difference in the annual return on the land, and to some considerable extent I think that is what I have done. The condition is fairly comparable to the

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condition in Colorado where not much product can be got without water, and with water a certain defined production, yet the land without water still has a nominal value, changing from location to location. It is not my idea that the Colorado water rights would be more comparable with Santa Clara Valley conditions, but I mean to say solely in that connection, that even in arid countries raw land that cannot produce very much agricultural returns has a value to begin with which has to be considered.

8914 Taking Santa Clara County—page 19—I state that the rental value of waters in the Santa Clara Valley will give some indication of the enhanced value due to the application of water. Then I go on to show what rental value was paid for water during those years, and state what represents the enhanced value to the owners of the land, and I capitalize that and say that it represents the value of the water right. I do not capitalize the difference between the net return they used to get and the net return they now get. Here is the addition of an element which increases your return, and that represents so much expenditure, which, capitalized, means so much per acre; now, in order to incur that additional cost, the farmer or land owner unquestionably believes that the land is worth so much more. I do not think that he would continue to indulge in that business, unless he actually did get out of the transaction adequate returns upon that enhanced value. It does not make any difference whether the original value inherent in the land itself was nothing, or \$10; the addition of this service enhances the value by so much. If the nominal value before was \$50 an acre, then his land would be worth \$250 if the enhancement due to this service is worth \$200 per acre. If the nominal value was nothing, all of the enhancement is added to the attachment of the water. The inherent elements of the soil must be there irrespective of any water right in order to give this increased value. I am crediting the land with something because the water service is the real means of bringing it out. I take the view that people who go in on such industries realize these things, and would not continue to pay for such service at such rate unless the resulting profit was very plain to them, as it is in most countries that I have been in.

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Mr. Searls: Q. Suppose a man has some land which he paid \$100 an acre for; we will assume it is worth that without any water on it, without any irrigation, and that from his hay and grain crop that he had grown he got \$10 a year return on it, and of that \$10 gross return he was compelled to pay out \$5 a year for the cultural cost, leaving a net return of \$5, which would be 5% on his investment. Now, it occurs to him that if he would spend \$20 an acre to place some water on his land, he could raise sugar beets, or alfalfa, or vegetables, and increase his annual return from \$10 to \$20 a year gross; that owing to the more intensive cultivation necessary for

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these crops we will say that this cultural cost increases from \$5 to \$7, and that the cost of pumping plus interest and depreciation on the plant would be \$6 more. That would make his total cost of operation \$13, and his net return would be \$7, instead of \$5. 8916

Mr. Anderson: His increment of return by adding a \$20 investment so that he gets \$7 return, net, is \$2 a year, and capitalized at 5% we will say it represents \$40, which would make his land worth \$140. In this case you have an enhanced value of \$40 an acre, and that might have cost the individual much less than what you capitalized at \$40 an acre, but if he gets an adequate return upon that \$140, that enhanced value, the service which he has himself rendered is certainly worth his difference no matter what it cost him; if it cost him \$20, he has a real value there, if he is satisfied with 5% return of \$40 enhancement. I think that is the way your business farmer will look at that proposition. You are talking of his expenditure, and showing that he actually doubled that capitalized expenditure. I think you are showing an expenditure that would justify an enhanced value of \$20 an acre. You are showing a return from that additional service of an enhanced value of \$40 an acre. I do not think you have to capitalize your operation also. I think you took the \$20 to incorporate everything that enters into that additional service. That is what I have attempted to do here, and what I think I have done. 8917

You conclude that the total value of the service is the capitalization of the \$6, which is the cost of pumping plus depreciation, and you conclude that the total capitalized increment to his land is nothing but the capitalized difference between the return on the land as it was and his return on the land as it is with water on it. Very well. Then it seems to me that precisely the position that I have occupied here, that the difference in enhanced value is the real value of the additional service that he has put himself to. He is willing, under the conditions here illustrated to give for that water service a rental equivalent to the enhanced value on the land; in other words, the enhanced value of the land is justified by that payment. There is no difference, whatever, whether he does it himself at this cost, or pays somebody else for doing it and gives them a little profit in addition to what cost they incurred, except in the one case there would be perhaps, an enhanced value of the land to justify the additional payment he would make; that I think is the distinction I have endeavored to show here, that to the owner who does the things himself there is one enhancement, and to the renter there is another. The value of the water right in that case would be, in my judgment, what the capitalized value of the service rendered would be, the service actually paid for. 8918

My sources of information as to the value of land in Santa Clara Valley were two or three, or four years ago; I made a visit 8919

through the valley, and made inquiry of some residents and land owners, and some real estate men. It is just a general impression that I have resolved from talking with people I met who seemed to be quite familiar with conditions in a general way. I did not examine any actual sales of land with and without water that were otherwise comparable. I endeavored to explain that the distinction, according to my own conclusions, was not very sharply defined.

8920 Taking page 23, where I speak of storage facilities for 7,000 to 8,000 acre feet: Those storage facilities would cost money, and might tend to lessen the value of the water right as compared with the cost of free running water, and at the same time I thought it would be fairly well covered by the estimate I made of the cost.

8921 The Hayward lands on San Mateo Creek were east of the town of San Mateo, and between that and the bay. It is possible there is a considerable quantity of marsh land there. I could not express an opinion, but it is probably so that if there is some marsh land there now, that there was considerably more originally. I should think that land was less valuable than the land around the Howard Estate and the Parrot Estate; that is, so far as its value as land is concerned. The San Mateo Creek flows through the center of the town of San Mateo, practically, and is bordered by town lots. It is about what is shown on this Map 66 as the west line of the town of San Mateo, I should judge, where you would strike these suburban villa sites, though in all probability there are some villa sites inside of that line. I do not know that for sure, I am simply concluding that.

8922 Referring to this land that Hayward owned originally, and to the land which is comprised within the San Mateo town lots, it may be that there is an element of betterment there, due to the fact that the Spring Valley Water Co. stopped the winter floods of San Mateo Creek by building the Lower Crystal Springs Dam. The owners of the Hayward Estate would probably not have found any particular use for the waters of San Mateo Creek on that tract, but I do not think that that of itself would affect their judgment of the value to the buyer of the riparian rights.

8923 I think I could know of some cases where the owner of a 50-foot town lot would think that a riparian right on that lot was valuable to a probable purchaser. He might think it was useful, and perhaps valuable to have that stream flow past his property. I think that condition prevails in San Mateo today to some considerable extent. The lots which bordered on San Mateo Creek might have a higher value with water flowing past there, and it might not be of value.

8924 Looking at it from the point of view of the value of the riparian right to the owner, and not from the point of view of the value to the purchaser, from all I can gather about the history of the Hayward Tract, I should be strongly inclined to think that to the owner of the

Haywards Tract the riparian rights on that tract would be fully as valuable from the location which it occupied, even though he could not use the water, as the value of the Parrot Estate and Howard Estate where they could take a certain amount of water for domestic uses and irrigation of the garden; that is, taking it at the time of the purchase. I am taking into consideration this fact in that connection: The owner of that land was in the water business at that time; he owned lands up in San Mateo Creek, and he owned lands apparently on the site of the Crystal Springs Reservoir, and was in the business of supplying water in that vicinity. I think that fact would affect his judgment as to the value of the riparian rights on his lands down near the bay; he was familiar with the conditions, and familiar with the value of such properties as riparian rights.

It would be my assumption that in a condemnation suit for the acquisition of these rights that the measure of value would be what they are worth to the Spring Valley Water Co. alone, and I think consideration would be taken of all the circumstances.

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Mr. Searls: The only point is this, your Honor, that the witness has appraised these rights on the Alvinza Haywards Tract, on which the original records are lost, on the same basis as the average cost of the rights on the large estates of Parrot and Howard, the rest of the purchases there being of comparatively small amount, and affecting the average price very little. It strikes me that it inflates the probable cost more than reason would dictate.

CROSS EXAMINATION BY MR. SEARLS.

Mr. Anderson: For the figure of \$750,000 the company acquired all the riparian rights that the Alameda Water Co. had at that time, including those attached to the Vallejo Mills. The right at Vallejo Mills was the right to operate that mill; I don't know how many inches that would involve. I do not remember reading the findings in the Spring Valley Water Co. vs. Clough case, and I do not recall whether the Court found that the Vallejo Mills right was the amount of 3 second feet. The \$750,000, as I understand it, does not include all of the rights that Alameda Water Co. claimed to own at that time in that vicinity. They were claiming the right of diversion on that stream. There were probably not any other riparian rights not accounted for elsewhere. There were no actual diversions anywhere else that they made at that time that I know of. They did not have any other adjudicated right that I know of at that time.

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If I were going to reproduce the rights today, the reproduction would be the effort to secure these rights from the point of diversion to the bay, and I would not figure on individual cases. I don't think you could figure on reproducing the identical rights that were acquired from the proprietors, as the probabilities are you would find the tract in separate ownership and subdivisions, etc.

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8928 The 1,685.78 acres, page 33, which includes the total riparian area included in these grants, includes the Howard and Parrot Tract. The total area of the Howard parcel, 622, is 2,140.9 acres, which was made up of the areas of several tracts in the ownership of Howard, Howard & Bowie, and Bowie, as follows: Howard 351.41 acres; Howard & Bowie 1,044.59 acres; Bowie, 4 tracts, 351.49 acres, 125.62 acres, 124.77 acres, 143 acres, total 744.88 acres; total 2,140.96 acres, which compares with 2,140.9 acres. The last two mentioned items of the Bowie holdings are a total of 267.77 acres; they are entirely riparian to the San Mateo Creek. Of the remaining 1,870.19 acres, 938 acres are riparian in the sense of being within the watershed of San Mateo Creek, and the balance is not riparian to that creek, it is over the hill; over into the next watershed drainage area north—that is the distinction; the addition of 938 and 267.77 makes the 1,205.77 acres which I took as directly riparian to the San Mateo Creek in that transaction.

8929 Howard and Bowie could not use that water on the other side of the watershed by virtue of their riparian rights. I will say, in that connection, that that is entirely a subdivision of my own thought, simply what I understand to be what is riparian to the stream; it does not extend beyond the watershed.

I don't understand that either the owners of the Parrot Estate or Howard Estate had any right by appropriation or actual diversion in San Mateo Creek. I presume there had been actual diversion there by well or pumping, or some facility, to furnish it for domestic use, but I do not know that personally. I presume that was true if they lived there, and I think I had information that they did live on that creek at that time.

Mr. Greene: Our information is that they did actually pump at that time, but it was not particularly satisfactory information.

Mr. Searls: Do you know what the quantity pumped was?

Mr. Herrmann: Just what they needed for gardening and domestic use.

8930 Mr. Anderson: I should say that it was a fair assumption to say that if they pumped only what they needed for gardening and domestic use, it is probable that the amount of water they took in that manner was not any greater than the maximum they could have taken in the exercise of their riparian rights. That is to say, that under riparian rights they were entitled to take their reasonable portion of the waters of the stream. I don't know whether the basis of frontage or the basis of area would govern the most as the basis upon which the flow of San Mateo Creek would be apportioned among riparian owners for their use. I think the definition of reasonable use is as near as you could come to it, and that might be for domestic purposes; it might be for irrigation or application to the soil. I do not know, I never had any limitation put upon that.

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Howard made a contract with the Spring Valley Water Co. for 150,000 gallons per day, which was the contract for riparian rights purchased. I know there were two contracts in existence, one for 500,000 gallons. I would not undertake to say what the flow in San Mateo Creek was in 1886. The difficulty there would be as much in knowing the average volume of the stream as would be the apportionment to the riparian right owners; that I would not undertake to speculate on.

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I would not think that Mr. Parrot could have taken more on his riparian right than the company agreed to deliver him. I presume that the Parrots and the Howards were pumping from underneath the stream, probably not as much a quantity as either of these states in the consideration. I am unable to state whether the amount of water required to be delivered to these riparian owners under the contract was in excess or not of the riparian owners proportion or share of the flow of the creek prior to the date of the contract; I have not looked at it from that point of view. I simply regard it as an obligation, as part of the consideration in the transaction, and the same is true with respect to the obligations to deliver water from Alameda Creek.

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It might be possible that these contracts were nothing more or less than a conveyance to the company of what riparian rights these riparian owners had with a reservation of the amount of water they had been taking. In other words, that they estopped themselves from complaining against the company taking the water that they did not take, but the evidence to my mind would indicate an altogether different state of affairs, particularly in connection with these two on San Mateo Creek. I am simply now considering the conditions as they bore upon the transactions; they not only reserved a quantity of water, but they called for a cash consideration of considerable amount. I don't know that these people really have the right to get as much water as they ever had, but the fact that they had an obligation there to furnish that amount of water at some cost to them, seems to me to indicate an additional consideration in the transaction.

ONE HUNDRED AND TWENTY-THIRD HEARING.

MARCH 24, 1916.

Witness: GEORGE G. ANDERSON for Plaintiff.

F. C. HERRMANN for Plaintiff.

(Certain corrections noted in the transcript).

8933-34

(Counsel for Defendants stated that in the rating base for the different years real estate should have the same treatment that the structures did, which is also satisfactory to Counsel for Plaintiff).

Witness: GEORGE G. ANDERSON for Plaintiff.

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CROSS EXAMINATION BY MR. SEARLS.

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I think the value of the water service itself constitutes practically the value of the water right. In the Spring Valley Water Co.'s case the consumer pays for the service of the water. He actually gets the water, but that does not convey the right of it in itself. The same proposition is true when the Spring Valley or any other corporation, seeking to acquire a water right would acquire it, would purchase it from a then user, he would charge them the capitalized value of all the cost to him. The measure of the value would be the amount of damage resulting to his land from taking this irrigation water away from it, and that damage is the capitalized value of the service on his land, which is the water right.

Taking the illustration of \$120 per acre, which would be the capitalized cost of operation, the proposition is exactly that the value of the water right is reflected in the enhanced value of the land which is attained by the service of that water right. This is entirely independent of the structural value, and that is what I sought to give in all instances, and not only structural value, but all that is embodied in the value of the property itself which represents the water right other than the water value.

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Referring to the Santa Clara pumping; I have capitalized there the cost of operation, and have added to that the capitalized interest, and depreciation on the structures, and all that represents to the renter of water as used in that illustration, the cost of the service to him, which is the value of a water right reflected in the enhanced value of the land produced by the service of that water or water right. It is the net value to the man who uses that water upon his land, and it is what he would regard the value of that water right, were he disposing of it to another purchaser.

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The situation, as I view it, in the Howard and the Parrot Estate cases, is that they conveyed to the Spring Valley Water Co. whatever rights they had in the nature of riparian claims against that stream. In that transaction is an amount in cash, and an obligation on the part of your purchaser to furnish a water supply at a certain price.

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Now you have, so far as the original riparian owner is concerned, a right to an unmeasured amount of water, which is the right to have that water pass his land. I don't know that it could be made definite under your riparian doctrine as I understand it; he has a right to the reasonable use of whatever water flows in that stream. I don't know that a reasonable use as between riparian owners is clear to me as to just what that might be interpreted in volume. It would vary with the condition of each stream, and on one particular stream it seems to me it would vary very considerably from one time and another. I take it

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that in those considerations the Spring Valley Water Co. obtained a right to entirely extinguish the riparian claim of the original riparian tract owner, and paid for that cash and a cash equivalent in a water service. I think that is the sum of the transaction, and going a little further, it simply resolved itself, instead of paying \$200,000 to one man, it was more convenient for him to accept \$100,000 in cash, and have the balance of that translated into a water service, which is, of course, a value.

I do not think that value is all allowed, either in direct capitalization or in operation expenses, in the consideration of the cost of the acquirement of those water rights, which are over and above all expenditures in lands, structures, and everything else which makes the diversion possible. The cash payment covered all the original price that was paid above the obligation, but the cash payment was not the total consideration of the transaction. The rest of the consideration is not taken care of in the allowance of the structures as part of the structures of the company, permitting them to earn depreciation and interest on those, and an allowance in their operation account of the operation expenses of conducting water through those structures, because in either of those cases the Spring Valley Water Co. has obtained the total right of the extinguishment of the claim for riparian flow past these lands; they have acquired that right to the extinguishment of that claim; they pay for it in a sum which is not included in any of the other elements making up the total system, and they pay for it in two elements, one in cash, and one in water service which has a cash equivalent.

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It may, or it may not be the case that it amounts in effect to a reservation by the riparian owner of all the water he needed to use, and that all that he estops himself from complaining about is the company diversion of water that he never wanted and never used; that I cannot undertake to say. The general view here is a consideration which must be taken into account, it seems to me. I don't think there is any getting away from that.

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I did not capitalize the obligation to deliver 300,000 gallons to the San Mateo Water Co. at the San Mateo Screen Tank, as that did not come in in any transaction of extinguishing their riparian rights. They bought out the company's land as a whole, but that was above the point of diversion of these waters. In buying those lands, they bought the riparian rights with them, and that is incorporated in the other elements of the structures. If you assume that the San Mateo Water Co., instead of owning the lands in the Crystal Springs Reservoir site, owned merely riparian rights on those lands, the company would have bought riparian rights there, would have paid a cash consideration, and would have obligated itself to deliver 300,000 gallons daily to the San Mateo Waterworks at the Screen House, and that

8941 would be, and is incorporated in the appraisal of the lands and structures, and does not affect its value which is outside of these, and representing the cost of the riparian rights below the point of diversion—the extinguishment of those rights. The obligation to deliver 300,000 gallons to the San Mateo Waterworks was not capitalized in estimating the original cost of their lands, because it becomes a service charge. That is part of the amount included in the million gallons daily which is deducted from the mean flow, from my valuation of the water rights.

8942 The distinction between that case and the case of these riparian owners is that one case is above your point of diversion, and is included in your structure values, or in your land values, and the other case is below your point of diversion, and the extinguishment of rights below, which gives the company the power and right to divert and use elsewhere than on that creek, which is not included, and has not been included in anything but the value of the water right. The riparian owners did not convey to the company the right to divert beyond the watersheds, but the extinguishment of their riparian claims below the point of diversion did convey that right, and it did give that power. So long as there was one single riparian owner there who owned 10 feet of land, he could enjoin the company from diverting, and therein lies the value that such riparian owner may have got and could have exacted a very much greater price for his holding, being the last holding, than perhaps any of the others could. If the company proceeded by way of condemnation, the probability is that he could not, but the liabilities are that he could, and he would.

8943 In estimating the cost of reproducing the water rights of the Spring Valley Water Co., I thought it would cost three times as much to buy these rights in 1913 as it did originally, and I stated that that would not apply to whatever shadowy rights the company acquired from the Alameda Water Co. for \$750,000. I don't know whether they would need to spend that \$750,000. I am simply stating in the cost of originally acquiring these rights what I found to have been expended. In multiplying by three, I think I add that a number of the individual items might involve a larger multiple. My statement as to the factor of three is based on the analysis of the assessed value of the riparian rights, and the assessed value of the lands, from which the riparian rights were originally acquired, and the general evidence that they are from three to five times what they were in 1886 to 1889 when they were so acquired. I am simply using that as an illustration of the best information obtainable at this time, and I think some consideration should be paid to them. The Assessor of San Mateo County does not assess Spring Valley rights at all, and in San Mateo County I have taken consideration of the increase of the lost value of the lands to which the rights originally attached. There evidently has been some

controversy in Alameda County as to the assessments, and I would not undertake to say whether or not the assessments of those rights represent the carefully considered judgment of the Assessor of Alameda County as to what their value is.

In figuring the reproduction value of these rights in Alameda County, I take into consideration that by reason of these continuous controversies and litigation in recent years, that the owner of the original riparian tract has now an idea and a knowledge of the value of these rights. I am putting myself in this position: If these rights were still attaching to these riparian tracts, and if there had been no Spring Valley Water Co., and they were sought to be repurchased today, the general development of the country would have given the owner of the land a better appreciation of the value of such rights attaching to these lands now than existed 30 years ago, and that that information and knowledge would have been increased by the result of these controversies, and that he would consider that. I think that the controversies would have existed to some extent. I do not think you can separate that element from the mind of the owner of the original riparian tract at this time. I think it would have some considerable bearing in showing as a part of the measure of their value that the damage to their lands resulting from the taking of these rights would amount to three times the price originally paid, supposing the company went into court and attempted to condemn these rights. I don't want to admit that the company is damaging their lands to that extent, as I think it is apart from that; as I say there, it is as much mental conception of the value of these rights by the owner as an estimation of the real damage accruing from the separation of these rights from these lands.

Referring to my testimony in the Denver rate case, page 8124 of the record, as follows: "Q. Is it, or is it not true then that the quantities to which you have referred correspond to what irrigation men sometimes call guaranteed supply to that extent? A. It is guaranteed supply without any question. Every element of doubt or uncertainty of water product has been eliminated from this consideration." That was in connection with the appraisal of reservoir supply. The water rights included the reservoir supply. The land values and structural values were in addition to the water right values given in that case. There is no real difference between the basis of measurement that I used in that case, and the one I used in this case. The yield considered in that case, and the particular reference to that question that I mentioned above, was the yield of reservoirs taken over a period of years. I think the particular reference to that was some testimony with regard to the Loveland Reservoir, in which its yield was considered over a period of years as so many acre feet per share.

On page 2128 of the record in that case, the following question and answer were given:

"Q. In making your determination of yield from these water "rights embraced in the group about which you have just testified,"—that was the group principally from the Mississippi galleries—"have "you based the determination upon the actual history of the yield "from those galleries?

"A. I have taken, made the determination from the actual yield "from these sources since the year 1900 to the present time.

"Q. And based your valuation upon that yield, have you?

"A. Yes."

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That also, to a certain extent, was a reservoir supply; the galleries are underground reservoirs. The galleries at Sunol would be the same thing. These would regulate your supply, and that is the additional value you get from a storage reservoir, that it does so regulate and make uniform the supply.

In the case of the Alameda sources I take the maximum yield for one month, because that might also be indicated, and is indicated, in my judgment, in the Alameda sources, that the sustained draft for one month is indicative of the ability of the source to supply that much; that it falls down below that may be dependent upon the demand at the time; in other words, that it could be sustained at that rate if it were required in the system. Because it could be sustained for one month in certain years, I mean that under the conditions that it would be always sustained, and could be physically.

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The year 1913 was the first year when the booster pump was in operation, and it went apparently as a maximum to 20.1 million gallons in that year, in the month of April. I think it is probably true that the company could have pumped 20.1 million gallons during the whole year through that Alameda pipe line, but as to 1913, I cannot tell you. I conclude that it would have been a physical possibility to get that much water there, but I don't know. I have simply a knowledge of the records which indicate this withdrawal at that time.

If they did not pump the water at Pleasanton, it would come to Sunol, but it would not come as well regulated, and the amount that evaporated might enter into the operation. They are saving the water by bringing it in the pipe, instead of letting it come down the natural channel. Evaporation is an element, to some extent, but it would not be material in that distance. I have no idea at this moment what that evaporation would amount to.

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I could not say for certain whether there was a demand for all the water the company could bring over in the year 1913. I don't remember the conditions of 1913 in this vicinity sufficiently well for that.

My price of \$60 per acre foot at Denver corresponds to \$66,000 per million gallons daily, or a little over \$66,000, and the Master's

finding was that the \$55 corresponded to \$61,630 per million gallons daily.

RE-DIRECT EXAMINATION BY MR. GREENE.

The Denver situation was based on my own testimony of \$60 an acre foot, that was based on the value of irrigation rights in the same neighborhood. The finding by the Master was \$54 per acre foot, or a total of \$2,947,000. The average delivery to the City of Denver by the Denver Union Water Co. is about 45,000,000 gallons per day. The basis of the valuation was upon the water rights used for agricultural purposes in the immediate vicinity of Denver. There the conditions are different from what it seems to me they are here in that while the water rights and the water supply is used to its limit, the agricultural products obtained from the use of that water are limited to the staple agricultural production of, say as high as alfalfa, and some sugar beets—not much though, immediately around Denver; the average price of the best lands in that immediate vicinity ranges from about \$250 to \$300 per acre, with water rights, and all improvements. That corresponds with what I think I have stated here as \$400 per acre, with the water only attached; in other words, the service which these water rights can produce in Colorado, and in Denver, particularly, are very much less than what can be obtained for similar service of similar water rights in this vicinity.

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If you were going to attempt to reproduce the water rights on Alameda Creek, they would include the acquirement as against the riparian owners from Sunol to the bay, and there would be the purchase of the extinguishment of all other rights that have matured in the interval. If there are any rights on the Niles Cone, those also would have to be covered.

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My assumption of reproduction is based on a general increased knowledge of the value of water which has been very marked, unquestionably in the last 30 years, not only in this section of the country, but in all countries in the semi-arid and arid regions.

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The distinction I have in mind with regard to the value of water rights that either were actually used for domestic purposes, or were susceptible to that use, as compared with water rights which might be availed of for irrigation, and which I have always had in mind, is that the water rights for domestic purposes are ordinarily, and naturally ought to be, in advance in rank in right on the stream to irrigation rights, for the reason that for domestic purposes you require an assured and continued water supply, which only the earliest irrigation rights can supply. In addition there is the factor of the continuous all-the-year-round use, so to speak, which the irrigation right does not require, or seek to obtain, and the further fact that there is a requirement in the domestic use right of an assured supply

at all times, which the irrigation right might not have, and would not be seriously affected in value if it did not have. Potability cuts some figure in this discussion, for naturally you seek for a potable water for domestic purposes, when it might not be necessary for irrigation purposes.

8954 The obstacles in my mind in seeking a determination as to the reproduction cost of the water rights of the Spring Valley Water Co. were very largely the difficulty that it seemed to me to be inhered in the proposition of acquiring these rights at the present time at all within reasonable cost with the general growth of knowledge, and the appreciation of the value of such rights. I am speaking now very largely of what the growth of knowledge has been in the arid regions as regard the value of water rights within the last generation. I think that is true in Colorado, in California, and all over the western country. There is no question but what speculation would enter very largely into consideration of reproduction cost. The difficulty of estimating what would enter into the consideration of value in reproducing these rights at this time would be a question of speculation. It would be difficult to know if the value of the land of the riparian tract, and the value of that land divested of the riparian right, would have any effect, or any bearing upon that consideration. It would be very difficult from my point of view in consideration of these matters to place the situation as it was before these rights had been divested from the land.

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RE-CROSS EXAMINATION BY MR. SEARLS.

8955 There is not much sugar beet cultivation in the immediate vicinity of Denver, and the smaller profit from that class of products is exactly the basis upon which the value of the water right was considered. In California I considered the land in Southern California in relation to the values developed in Santa Clara Valley; they are comparable. It may be true that no such values of land have been developed in Santa Clara Valley as in the orange and citrus fruit districts around Los Angeles, but I have pointed out that the application of water in Southern California, as in Santa Clara Valley is very similar in result. I do not think that it is a fairer statement to say that lands in and around Denver which grow sugar beets and alfalfa should be more comparable to the land in and around the Santa Clara Valley where similar crops are grown. The reason is because they have a slightly higher value per acre out here than they have in Denver, which I think is entirely based on the value of the product itself. In Colorado, and not any great distance remote from it, the values of water rights are higher where they are attached to fruit culture than in the staple agricultural products in places like Greeley, Fort Collins, and Denver. As another illustration, the value of the water rights immediately around Denver was limited to productions immediately

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SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

around Denver, while at Greeley and Collins, only 50 or 60 miles away, where the sugar beet culture has been intensely developed, a greater value of the water rights was actually shown in that Denver case. Several witnesses testified to \$72 and \$75 per acre foot, as compared to \$60, which I testified to, and \$55 which the Master found. It is true that the Master also stated in his findings that the value around Denver should be the criterion, and I simply illustrate by that the fact that you are within 50 miles, showing a greater value of a water right by 25%, because of the greater value of the product obtained from the use of it.

Witness: F. C. HERRMANN for Plaintiff.

Herrmann

DIRECT EXAMINATION BY MR. GREENE.

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Page 31 of my record is made in compliance with a request by his Honor as to a segregation of the value of this water right during the different years of this period in question, and that fully states my appraisal on that basis. The unit price is the same.

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(Memorandum on the value of the water rights of the Spring Valley Water Co., by F. C. Herrmann, introduced and marked "Plaintiff's Exhibit 173".)

I have checked up the quantities given as the maximum draught from Sunol during the years 1907 to 1912, inclusive. They are the measurements taken at the Belmont Pumps by the pump displacement. There is no allowance for slip. I did not know that Mr. Sharon estimated it at 5%; if he did, I think the estimate is too high. Those pumps, and pumps of that type that are in large units, with a long stroke and a slow speed, and that are maintained and kept up as well as those pumps are, have very small slip. The company makes studies every once in a while to determine what that slippage is; that, of course, varies according to the condition of the valves; sometimes it is found very low, and sometimes higher, but with the constant attention that there is at Belmont, those things are picked up very, very shortly, because they can tell from the fact that they have the reservoir inlet, and the number of strokes per minute that they have to make, whether the slip is increasing or not; just as soon as it does, they take down the pump and fix the valve, because that is where it is. I would say, on the average, that about 3% would be a fair allowance to deduct for slippage. I have not deducted it in taking my net estimated yield. When I took these figures, I took them from this "Exhibit 12-U", under the impression that they were measured at the other end of the pipe line.

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The presence and the ability to utilize a reservoir, to my notion, increases the value of a water right by reason of the fact that you can regulate your flow and vary your draft. A parallel, I would

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say, would be this: Suppose you have a stream constantly one second foot; you can only draw one second foot from that without regulation by storage. We all know that in all uses of water, the use varies in amount, sometimes greater and sometimes less, so that, as a matter of fact, with simply a constant flow of one second foot, you would not be able to get the duty of one second foot from it, whereas, if you have the facilities to regulate that, you can vary your draught in such a way that you can get the full duty out of that same second foot. That does not mean that I would include in my water right value any element of reservoir value; not alone that, but there has not been added any value by reason of the fact that it is better because it is in connection with reservoirs. To my notion, it is more valuable.

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What I have valued is the right to divert at Sunol, and not the right to draw from the underground reservoir, and to utilize the underground reservoir at Pleasanton, which is altogether a different right, and very much parallel to Crystal Springs, or other surface reservoirs. The right to divert—we have used it at Sunol simply as a matter of convenience, as we have used San Mateo Creek at one point. With that storage at Pleasanton there would be no question at all about being able to get the full pipe line capacity during the year 1913, or during that period of dry years, and that is based on my study of the situation, and I have made a very close study of it. The year 1913 was a very dry year, and 1912 which preceded it; it is probable that those two years together presented as severe a condition as ever existed in this country as regards water supply.

CROSS EXAMINATION BY MR. SEARLS.

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I have made a study of the hydrography of the Arroyo Valle and Mocho, and the Livermore drainage areas which contribute water to this underground reservoir in conjunction with Dr. Branner of the Stanford University. I have made a study of the geological formation over there, and have made a study of the fluctuation of the water plane over those gravels, and all of the factors that contribute to the possible yield from that territory over a period of years. The records show that the company got a maximum in 1913 of 20.1 million gallons daily. The 21 million gallons daily is the pipe line capacity. There is no question that the company did not get an average of 20.1 million gallons daily from the Alameda system during the year 1913. The month of April was the only month that they got anywhere near that amount. I think the dispute with the Livermore farmers antedates that series of dry years. I think that it was in 1914 that they started the move to organize the Pleasanton Water District.

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Mr. Olney: It was June, 1914, as I remember it, and the District was finally organized in July, or August, 1914.

Mr. Herrmann: My recollection is that we did not keep both pumps at Pleasanton running from August through the rest of the year. My recollection is that some time in 1913 the casing broke in the Ravenswood booster pump, and we had to send East for a new half casing, and it was impossible to utilize the Ravenswood booster pump for considerable of that period, during which time, of course, it would be impossible to pass 21 million gallons daily through that pipe line.

Assuming that both of those pumping stations were running the latter half of the year, it would not indicate that the company could not get 20.1 million gallons from the Alameda system, it would be simply a matter of putting in more pumps, which they didn't do, and they didn't get the 20.1 during the year. That has nothing to do though with the ability of that underground storage, which, in storage capacity, is very much larger than surface reservoirs of the company, to sustain a draught continuously of 20.1 million gallons, or 21 million gallons daily. The company owns a large part of that underground reservoir, and they have acquired certain rights to lower that water plane, and as I understand it, they can acquire the rest by paying the damages. I don't know whether it would be necessary to buy all the lands in the Livermore Valley to acquire those rights or not. That would depend on whether it would be wise to do it or not as a matter of expediency. It would not be necessary to do it, as I understand it.

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Mr. Olney: There is nothing definitely decided with those farmers to date. The officers of the District, and ourselves, have come to a sort of tentative arrangement, so to speak, which both sides rather anticipate will be executed, whereby we put in pumping equipment on certain wells there, and agree, in case the water level in a certain pilot well which is just east of the company's property, falls below an elevation of 345, that during the period that the water level remains below that point the company shall bear the expense of pumping in those wells; we are given the right to draw what water we need or desire upon that condition. There are also other conditions coming in, but that is the main one; for example, there are certain wells which we speak of as community wells, which are designed to serve a number of small tracts there, we have to equip those wells in the manner which I have spoken of, and also have to put in a reservoir, a 350,000 gallon reservoir, so that these various tracts can be served. I have not any idea what the total expense of the thing is going to be.

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CROSS EXAMINATION BY MR. SEARLS.

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Mr. Herrmann: The utilization of a reservoir, and the structures that go with it, make a regulated flow of water possible. The only value that a reservoir has to a water company is to store the water,

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to regulate the flow, and to utilize the water from it. The value of the reservoir, and the structures that go with it, is an entirely different thing from the water rights; an allowance for land in the reservoir is the market value of the land regardless of the water right. You could still own those without the ownership and utilization of a water right. As I understand it, I would not say that a reservoir without any water has no value. If there was no water, I should say that reservoir lands would not have any value for reservoir purposes. If you had a granite bowl out in the desert, and had no water in it, it would not be worth 15 cents as a reservoir. You have to have a water right besides, for instance, in the case of the Crystal Springs Reservoir, just having the reservoir without having the right against anybody else there to utilize that water, would not serve your purpose.

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It is my idea, where water is stored and regulated, the value for water rights is more valuable than water rights where the water is not stored and regulated. It is not different from any other water when it is stored; it is your right to utilize that water, to divert it and use it elsewhere, and as you have a perfect water right, that water right is worth something. It would be more valuable with the reservoir there than without it. The right would be more valuable. You have taken the market value of that land in the reservoir; now, besides that you must have the right to divert and use that water; that is the water right. That has values separate and apart from any values you may have in the structures or in the lands. Even if the company owns in fee simple absolute all the lands from the head waters of the streams tributary to the reservoir, to the point where the stream flows into the ocean, and that land is given a certain value by the company, and all they have to do is to divert the water, it is still my idea that if the water were regulated, it would be worth more than if it were not regulated, by reason of the fact that its performance would be better, its duty would be better. You can get more with it because it is regulated than if it is not regulated.

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If you acquired all that land, and the rights went with the land, of course nobody could stop you from using the water. The rights would go with the land if it controlled the whole thing. The value of those rights would be reflected in the value of the land; in other words, land in that situation would be worth considerably more than land without the water on it, and that difference would be the value of that water right. Under those conditions, if the valuation of those lands included the water right properties that attached to it, you would not value the water right on top of the value of the land; it would depend on entirely what your valuation was made on.

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Part of the water of the Crystal Springs Reservoir, the San Andres Reservoir, and the Pilarcitos Reservoir, and some of the Alameda, is appropriated water, which is appropriated by use. If they

extinguish the riparian rights below them, there is nobody who can kick against their taking the water at the Lower Crystal Springs Dam, and if they own all the land in the watershed, there is nobody above them who can kick against their taking it, but in addition to the ownership of the land, they have the ownership of the water rights, the right to divert that water and use it elsewhere. That is worth a great deal of money.

(It was agreed by Counsel that Mr. Herrmann's memoranda, as "Exhibit 173", is admitted with three exclusions of San Jose segregations as made by him therein.) 8971

I have advised people with regard to water rights in California but I have not personally bought or sold any. Purchases of water rights were made on the basis of my advice, some of them in the Sierras, and some of them in this neighborhood. I did not rely upon the prices which were paid for any of those water rights in fixing my valuation of the Spring Valley rights, except my general judgment with regard to them. Some of the purchases have not yet been consummated. 8972

A water right, as considered in my appraisal, is the right to divert water and use it some place away from the stream, or to a non-riparian use. It is a water right which is completed as against all persons who might object to its use by the Spring Valley Water Co., whether those persons are situated above or below the point of diversion, to the extent of these water rights. 8973

Pleasanton lands are the same thing as a storage reservoir. Of course, they are used for agriculture in addition to that, but I do not think their value for agricultural purposes has been seriously impaired by any amount of pumping the company has done thus far. What I am valuing is the right to divert that Pleasanton water at Sunol. We have called the point Sunol because that is where all the waters are gathered together. So long as the company is allowed the value of all the riparian lands between Sunol and Pleasanton, there is no additional increment in value acquired by the time the water reaches Sunol. I valued all this water, of course, on the unit basis of so much per million gallons daily. 8974

I think that the water right at Crystal Springs has additional value, although I have not given it any by reason of the regulation that is caused at Crystal Springs Reservoir. The Livermore gravels I used in just exactly the same way, by reason of the fact that you can regulate that water by use of the underground reservoir at Livermore. It also has an enhanced value over what I have given it, according to my notion. The two cases are exactly parallel; the only difference being that one is a surface reservoir, and the other is an underground reservoir of very considerable size. I do not ascribe any different value to the Pleasanton water than I would to Crystal Springs water. I have put all of the sources at the same unit value, 8976

the Lake Merced, Crystal Springs, and the Alameda sources. I don't believe that you could have the information to differentiate between them, and I believe that the value I put on them is the fair general value for all of them. One of the yardsticks that was used as a measure of that value is the value of water rights in Southern California for irrigation purposes. I think that the Southern California water rights would have additional value if they could store the water during the portion of the year that it was not used, because, in that way, with the same quantity of water running over that land, you could irrigate more land with it. You could perform better duty.

8977 Outside of the Bear Valley Dam, I do not know of any of those companies building extensive storage work for irrigation purposes alone. The topography in that neighborhood in the hills is not very favorable. As a matter of fact, it is rather unfavorable to the utilization for storage purposes, and there are not the facilities for storage there that there are in the neighborhood we have under consideration now. I have no doubt that if they were available, they would be utilized. If they were utilized, you would have to go through the same performance that Mr. Anderson went through to get your water right value; that is, get their assets and liabilities, and apply them in the same way with this addition; whether that would be the whole cost of those structures, I don't know. Of course that is problematical, and would vary according to the local circumstances. It might be that the cost of that storage would be very great, and it might be that it would not be so great; it might be very reasonable.

8978 I think that it is true perhaps with surface storage that the cost of that storage would be no more than the additional value which would be given the right if it were made for 365 days instead of 270; as a matter of fact, on the upper end of the valley, above San Bernardino and Redlands, they are spending a great deal of money now to utilize the storage in those gravels by spreading storm waters over those gravels to get them to absorb them, and utilize the storage space that is in those gravels. If the physical features were favorable to certain storage, undoubtedly they would utilize them. Usually in irrigation, the irrigationist has to co-operate with his fellows, unless he has a small individual pumping plant. That question of co-operation would enter regardless of how he got his water.

If you had two mutual water districts, one of which has a water right under which it can draw from a natural stream, and the other has to build extensive storage work and diversion conduits, or else install a pumping system to obtain subterranean water, the question of which of those rights would be considered most desirable from the standpoint of the land owners would resolve itself into a matter of cost, together with any factors of reliability that there might be.

Of course, if you are relying on a stream that is flowing without any regulation whatever, you cannot take care of the peak load like you can in a regulated supply, and that factor is a very important one. It is so important that in the large irrigation districts in this part of the state, or in the central part of the state, they are spending a considerable amount of money in order to utilize storage in connection with the natural flow of the stream, so that they can take care of their peak loads in the irrigation. They must go to expense to make surface storage, and of course underground storage is sometimes accessible without any structural expense.

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Where you strike an underground storage reservoir, the company may in time acquire a valid right as against the overlying land owner. The geological and topographical conditions in the Livermore Valley are unique by reason of the fact that there is that great fault line that passes through the Calaveras Valley, and through the upper reaches of the Laguna, and across into San Ramon, and that country, whereby the territory to the east of it has dropped and filled with gravel, so that the geologists tell us that there is there a gravel reservoir to a depth of something from 2,000 to 4,000 feet. That is quite different from most underground supplies. It is, in fact a cup or reservoir that has been created by nature, and has been filled with gravel, and the interstices between these gravels furnish the storage capacity of that cup. The fault, with reference to the pump, is west; it follows the scarp that is just to the east of Mrs. Hearst's home at the foot of the hills there.

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Beginning with the fault line on the west, this underground reservoir covers the valley floor to a greater or less extent, traveling eastward to a territory in the neighborhood of Livermore, and up the Arroyo Valle to the place where the Arroyo Valle Creek debouches from the hill. I would say it is nearer the Cresta Blanca tract; it is near what we call the Clay Bridge. It is near the company's property which lies between the Cresta Blanca and Pleasanton and the Arroyo Valle. The north boundary is in the neighborhood of that fringe of hills on the opposite side of Livermore Valley. The gravel slopes westward. Part of it in the western end has more or less of a clay cover. It is commonly called a clay cap, although it is not continuous. As a matter of fact that whole deposit has clay lenses scattered throughout it.

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Questioned by Mr. Olney.

In the northwest corner, and on the northern edge, the material is much more dense, comparatively, than the southerly and central part, and the contribution, comparatively, is light from that portion.

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Questioned by Mr. Searls.

I mean approximately the point where the Alamo and the Tassajero debouche. I made a study of that situation, which is embodied in the printed report gotten out by the Spring Valley Water Co., en-

8983 titled "The Future Water Supply of San Francisco". There has been a great deal more study since that time than was available then. My assumption of the 21 million gallon yield is based on all of my studies. I don't recall any mass curves that I compiled of recent date as a result of these studies showing the yield of the Pleasanton gravels.

A mass curve is simply a graphical way of showing the relation between a uniform draught and the inflow to a reservoir or catchment basin.

8984 In reaching my conclusions, I have used the run-off measured by the records of the company as to run-off in and out of that catchment area, together with the fluctuation in the water plane. Quite a number of those readings have been in conjunction with the City Engineer's office. We have been co-operating with the City Engineer's office in all of the hydrography in that part of the system. By that we have, among other things, ascertained the rating of the Sunol Dam, so that it has fixed the run-off at Sunol during the flood seasons, or during all of the time that water is running over the dam, going back to 1900. That whole record was questioned at the time of that hearing in Washington, and since that time we have been co-operating with the City Engineer's office in making current meter measurements so as to calibrate that dam; having calibrated it, we can now use, and the City also can use the run-off record over the Sunol Dam as being a good record without question, as far back as 1900. The studies to which I refer as having been made since the date of this report embodied in "The Future Water Supply of San Francisco" have some of them been made in conjunction with the City Engineer's office. The gathering of the physical data has nearly all been made in conjunction with the City Engineer's office. My particular studies have been made by myself. I have talked the matter over with the City's representatives at times, but we have not made any studies together.

8985 In my own mind I am convinced that the two sources, Sunol and Pleasanton, could readily supply this 21 million gallons. There is not any question at all about that, even in the very driest years. I am familiar with the conditions in San Francisco in 1913, and the notices which the company sent out to the people to save the water were words of caution. It was a question, not of water at that time, but of pressure and of pipe capacity. My recollection is that at the end of 1913 there was about a year's supply in storage in the Peninsula reservoir. Also you want to bear in mind that these two years, 1912 and 1913, following each other, have only in the history of rainfall records in this state been reached once before in the last 50 years, showing, of course, that it is an exceedingly severe test, the most extraordinary test; as a matter of fact, that was what determined the safe dependable yield of the company's supply, and it went through that, and at the end of that time there was a year's storage

on hand. I am drawing my conclusions from the facts as I found them, and the fact is that there was a year's storage on hand at the end of these two dry years. I think it speaks volumes for the available supply.

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In taking my safe dependable yield of the Peninsula supplies, I have taken the safe dependable yield as determined by a long record from a mass curve analysis, but that is a uniform flow throughout that whole period of years. I have not taken one month's maximum sustained yield there. As to the amount or the extent of the water rights in Alameda County, it appears to me that that is a legal question. I sought advice from our counsel, and that is what they advised me to take as being the measure of their water rights, and I have used it. Personally, I think it is a fair one.

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In spite of the fact that the mass curve, using a uniform draught from there, shows 19½ million gallons, as a matter of fact, during the 10 or 15 years over which my average was taken, there has been drawn from the Peninsula reservoirs an average of over 21 million gallons daily. Of course, that is due to the fact that the draught has not been uniform from those reservoirs, because it never is. In fact, that is one of the great benefits of the reservoir, you can change that draught. My estimate of the safe dependable yield of the Peninsula system includes all the water that has come into the reservoirs. As I understand it, the riparian owner has a right to the normal flow of the stream.

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My conclusion that the company has a vested water right to 19½ million gallons includes all extraordinary flood waters to which the riparian owners could not possibly acquire any right, and I have valued that on the same basis that I value all the rest of their rights; it performs the same function; you can do the same work with it, one is just as good as the other; as soon as it becomes the property of the company it is all water right, and it is a private right, and all used together. A great many of those water rights are in the nature of an appropriation in that they have been secured by use, and they are just as good as the rights that have been bought.

I don't think anybody can determine what the normal flow of San Mateo Creek is. My studies of the diversion of the company in the Peninsula system prior to the construction of the Lower Crystal Springs Dam led me to the fact that at the time the company purchased the riparian rights there was available about 4½ million gallons daily. Whether all of that was normal flow or not, I don't know. Nobody knows so far as I can tell, because it depended on how it occurred at that time, and there are no records of it.

The 21 million gallons from the Alameda system is the pipe line capacity. It is the figures prior to 1913 or 1912 that are the maximum monthly draught. Practically 21 million gallons daily has been brought over from those sources to the City of San Francisco lots of

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8991 times. The average for the period of litigation is about 15; it is the average of those figures in the third column on page 1-a. The company has the right, as I understand it, to divert 21 million gallons daily, and the amount of that right is what I have valued. The sources of supply are sufficient to furnish that much water. Therefore, the right is worth that much, and they can avail themselves of that any time they wish. I have taken the maximum draught for a period of one month as being the extent of that right.

8992 Take the Peninsula reservoirs; I have used the 19½ million gallons daily as the right throughout this period, although the tables show they have not used that 19½ million supply, and they had fully developed it; it was being utilized, or in the way of shortly being utilized, and was in the nature of insurance and a prudent provision on the part of the company to have available; I think it certainly justly can be charged.

8993 I should say that the water right at Alameda would be what they have used under these conditions of a maximum draught for the period of a month; whether the water be joined or whether it be separated, it amounts to the same; they have used the full capacity of that pipe line. Obviously, if they took 21 million gallons at Sunol, and then had a separate conduit from the Pleasanton wells to San Francisco, and drew another quantity, you certainly would have changed your present conditions, and you would have an increased water right.

Questioned by Master.

8994 My recollection now is that the company have drawn 21 million gallons from Sunol. There may be some of that that came from Pleasanton; there is always, even when the Pleasanton pumps do not run a certain amount of natural flow in those wells. It is a small amount, to be sure, but it is some. That, of course, is running down into Sunol through the conduit. If my recollection is correct, they have run 21 million gallons through that conduit, simply with the aid of that natural flow.

CROSS EXAMINATION BY MR. SEARLS.

The two sources have always been used in conjunction with each other, at least during the time of my knowledge, which began in 1910. One always assisted the other. There are times when the draught from Sunol is greater than at other times, and there are times when the draught at Pleasanton is greater than at other times, and the two together are always used in conjunction to deliver water to the Alameda pipe line as needed.

It is true, largely, that if there is plenty of water coming down Alameda Creek they do not pump. Of course, as to the amount of water that is coming through the Alameda pipe line, it depends upon the availability over here to some extent; for instance, if we were

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wasting water out of the Peninsula reservoirs here, had them full, and you could not conserve any more water, you would utilize as much water as you could up to your pipe line capacity out of the Peninsula reservoirs, and avoid as much as possible the cost of pumping at Ravenswood. Those operations are carried on in the interest of economy.

Questioned by Mr. Olney.

8995

I am quite sure there are not any records as to the amount of water that would have come down Laguna Creek and flowed into Alameda Creek above Sunol Dam without artificial assistance at Pleasanton, because I have always looked for all the available data on hydrography that I could find. Ever since my connection with the company there has been this artificial arrangement, and you would have to go back quite a number of years to get that other condition.

CROSS EXAMINATION BY MR. SEARLS.

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Lake Merced: The company owns the right to divert that water and use it away from the lands. The right is against everybody. Of course, the ownership of that strip of land between the dam and the ocean gives that right as against those lands. It is a question of whether other appropriators could not come in and take that water if the company did not utilize it. I placed the same value on the Merced water rights that I did on water rights in Alameda County where the right is good as against all riparian owners down the stream, and those up the stream where the company does not own the land. The company, for instance, could sell this land below the dam now, and still have that water right, and it would have value; in spite of the fact that you separated it from the land, the water right is there, and it has value, and it serves the same function that other water rights do, and therefore has value.

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In speaking of the water right below the dam at Merced, I do not mean the right to that seepage that runs down the canyon below the nursery, but I am talking about before the artificial conditions were created by them; there were riparian rights there, and those rights were acquired by buying those lands. Now then, the company having acquired this right by use, and diversion of this water, could sell these lands and still have a good water right which is of good value. With the conditions of the artificial dam there as it is today, assuming that the company had today this strip that was included in the condemnation suit, nothing could be done to spoil their water right; if that lake, as originally existed, with an outlet, before that dam was built, these water rights would be there, and they would have to acquire them as they did, and it is my understanding that they bought that strip of land, and in addition to that they paid the Clear Lake Water Co. \$150,000, and Mr. Weaver \$15,000; as I gather from the Municipal Reports, that is for a water right.

8998-8999

Aside from these estimates which I have made to cover missing records, specifically noted in my exhibit, I do not know of any other purchases by the company where the records are missing, but I have no doubt at all but what they are, as all these old records are incomplete. I have tried to get all the purchases, but there, as in all these old records, in going over them you have a feeling when you are through that you have not got everything that is there. I have tried to estimate what I thought would cover that, but I am not sure that it did; for instance, you find in the record reduplication of payments, and things of that sort, and undoubtedly there were a great many other things where there were other interests that were bought and no original record of it at all, as all of these things are bound to bring about things of that sort, and payments for reconciliation of disputes. We have a record of two or three of them, but I have no doubt but what there are a great many more. The \$30,000 worth of water rights on Pilarcitos Creek I purposely left out, because I think that was for the Apponolio, and tributaries of the Pilarcitos Creek, as they were not being utilized at this time. That was the Locks Creek supply which was not being used, and I did not include those. With regard to these other rights on the Apponolio and Locks Creek, the riparian rights that the company purchased were for lands which go to the bank of the Pilarcitos Creek, but the deed mentioned the tributaries of the Pilarcitos, and not the Pilarcitos, and so I did not feel that we were justified in including that.

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The 9 million gallons from the San Mateo Creek refers to, as the paragraph states on page 4: "No water rights were purchased by the company to secure the right to divert water from the San Mateo Creek at the first three points of diversion, the company's right to divert at these points to the extent of 9 million gallons daily being acquired by long and continuous use."

That is the Pilarcitos out of the San Mateo Creek, not the Pilarcitos Reservoir; the Pilarcitos Reservoir comes out, of course, of the Pilarcitos Creek, but for a period of years they used water out of the San Mateo Creek where the Pilarcitos Aqueduct crosses and carried the water into the San Andres, and then there was a diversion at San Andres, and the San Andres and this diversion, and the Upper Crystal Springs together, were about 9 million gallons daily. By this diversion, I mean the diversion from the Upper San Mateo Creek at the Pilarcitos Aqueduct.

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It is purely a conclusion of mine that the company had a legal right by diversion and continued use to that water. They used it. I don't know what other right you want. They diverted it and used it elsewhere. When they got the Lower Crystal Springs Dam, they bought out the lower riparian owners on San Mateo Creek, but that was some years later. It was necessary to buy out the riparian owners below, because they wanted to divert at Lower Crystal

Springs; they wanted an additional quantity of water. There were no additional streams made available by the construction of the Lower Crystal Springs Dam, but there was additional watershed. Of course, the watershed tributary to the Lower Crystal Springs took in the watershed that furnished the water which prior to that time went to waste, because there was no reservoir to catch it, so that the company increased its diversion at that time, and eliminated the flow down San Mateo Creek. They had the use of the water, and used it against these people on San Mateo Creek, and it seems to me it constitutes a very good right.

I have not used the cost per inch of the Vallejo Mills right anywhere. I took the total. Simply as a matter of interest, I thought it was about 10 cubic feet per second at the time the purchase was made. I didn't know there was any testimony in the Clough case which indicated what the low water flow of that stream was at the time of its purchase by this company in 1875. I think it is impossible to get any measure of a reproduction cost, and if the company did acquire any adjudicated right from the Vallejo Mills people, that would not change my views in the matter at all; the three second feet may be right. I simply made my estimate, which may be wrong, from all the information that I could gather, and I judge it is about 10 second feet. I did not utilize that at all in getting at any values, and would not.

9003

I don't know whether the Weaver purchase made at Lake Merced in 1872 was stock in the Clear Lake Water Co., or not.

Referring to page 6; the distance from the place of use, and the expense of bringing the water to the place of use, are factors in determining the value of water rights; one means the other as a rule, certainly for a domestic supply, because you have got to keep your water uncontaminated between the place of diversion and the place of use, and deliver it under pressure. If you were to suppose that you could bring water from Sierra sources to San Francisco at just as cheap a price per million gallons as you could bring it from the Spring Valley sources, the element of distance then would be comparatively insignificant, except that you would have to take into consideration with that the uncertainty of the continuity of service, and the ability to utilize this at this end to full duty; in other words, if it came here without storage supply being available, so that you could utilize that whole water right, it would not have that value.

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Questioned by Master.

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The question of distance reflects itself in the expense of operation, and there is aside from that the question of continuity of service, and there is always the probability of the lack of continuity in a long line which is a greater probability than it is in a short line. I mean without reference to expense at all. Also a matter of risk in the breakage of the pipe line in service; all that goes with it, dam-

age, and everything else that is liable to follow, and all of those things that are connected with that uncertainty. I think that is quite a factor. There is also the question of potability.

If there were demand in the bay cities for 150,000,000 gallons of water, and that amount could be brought from the Sierras more cheaply than the Spring Valley water could be stored, then the Sierra rights would not be equally valuable with the Spring Valley right. There is always the question that will have to be considered as to the continuity of service, the risk of damages, everything else that can happen to a long line, and there is also the necessity for storage on this end, and it would not be safe to utilize a long line and put it directly into the system, and the \$500,000 per million gallons daily which you assume it would cost to bring in the water from the Sierras would be much more than \$500,000 per million gallons daily, and the comparison would not be at all fair with the Spring Valley at \$700,000. The expense of bringing and delivering it is not the principal question in my mind. That is one factor, and then there is the question of continuity of service, and the liability of damage which must be considered.

There is probably 400 million gallons of water running in the Sacramento River, but as to the relative values of the rights to use that water, I would say the same thing as before; there is that additional danger because of length of line, and the uncertainties that occur along those lines because of bay crossings and things of that sort that are always questionable. I think Mr. Hazen's proposed conduit for the Sacramento supply is considerably longer than the Calaveras conduit. The bay crossings and the other matters I have mentioned, are questions that would always have to be considered, and would always enter into that comparative valuation.

I think the reason that the Spring Valley water appears cheap in comparison to the cost of delivering water from either the Sierra or Sacramento River sources is because the estimate has not been properly made. I have not seen a fair estimate of any of the Sierra supplies. Mr. Hazen's estimate for the Sacramento River was for 60 million gallons, which is comparatively small, and my recollection is his estimate was \$700,000 per million gallons brought simply to San Francisco. Even if the tunnels on Mr. Hazen's system should be built for the ultimate capacity of 150 million gallons, to put that source on a proper comparable basis with the Spring Valley, you would have to provide storage at this end for a long line like that, and you would have to deliver to practically the same points of delivery. I don't know whether that has been done in this estimate of Mr. Hazen's that reaches \$700,000, or not.

My idea with regard to the value of a riparian right of a 50-foot lot, such as exists in the San Mateo subdivisions through which San Mateo Creek flows, is this: That if the Spring Valley Water Co.

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were not there at this time that we are appraising, you could not now look at that, and come anywhere near estimating the conditions that would be there under these circumstances; certainly that water would not be flowing freely; it is too near by, too available, and everything else to be free at that time. There would probably be appropriations and use of that water, and the town of San Mateo might not be there; it might be villa lots all the way, and there might be a nice little stream to which these people would attribute great value. You would have to do so much speculation as to what the conditions are, that I feel that it would be impossible and hopeless to try to make a reproduction cost value, because I feel sure that whatever speculation you made that you certainly would eventually have to pay more in acquiring them by condemnation than the value that I have given for them. Knowing the Peninsula as I do, and knowing this whole situation as I do, certainly these water rights would not be loose. As I understand it, in order to get the reproduction cost value of the water right, you have to eliminate the utilization of that right at this time; in other words, you have got to imagine that right not in the hands of the Spring Valley; you certainly could not imagine that it would be running to waste.

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It is true that you have to start somewhere to figure reproduction cost at all, but after looking the whole situation over, I did not do it, because I felt there was so much speculation in the whole thing that it would be useless after you got it, that it would not be a fair criterion from which you could reason. If you were to assume that the conditions on the San Mateo Creek were just as they are, and you went to the owners of those town lots in San Mateo to acquire their riparian rights, I think you would have to pay a pretty good sum of money for it, even though in impounding that water you were doing them a favor, so far as any residence lots are concerned; they certainly would consider it a damage to remove that running water from their place, because they could readily provide means for carrying the floods past, and they would have the pleasure and the aesthetic duty that goes with it of having the low water flow go by them in a very pretty stream. If you were to exercise the right of eminent domain, it would probably cost you, and altogether with the money that you had to pay for them, enough so that per million gallons daily you would finally get up above \$100,000, because you would be carrying on suits for very small parcels of land at a pretty good price. Of course all of the Hayward lands are not marsh lands. You have the example right across from it of the Howard and Bowie which has been taken, together with the Howard and Bowie tract above, as an average in the price we used in estimating their original cost; there are two tracts in the Howard and Bowie, one of which is down opposite the Hayward tract, and the Hayward tract being at the end of that stream, would be particularly valuable and desirable in con-

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nection with riparian rights. The Haywards tract people could reclaim by utilization of these flood waters better perhaps than any other way; they could utilize the silt that would come down there in flood waters and build their land up so that they would get a fine quality of land at an elevation that would be high enough to materially keep out the sea water.

9014 The company probably would have to condemn rights to the extraordinary flood waters of San Mateo Creek. Those flood waters would have been appropriated and used by that time, and in order to get the use of them, they would have to condemn them. That is my idea of the way the situation would be. I assume that you can get a vested right in the extraordinary freshet waters by use and appropriation. When the Spring Valley Water Co. built the Crystal Springs Dam they interrupted the extraordinary freshet waters, and they acquired rights from the State.

9015 I have no information showing the amount of water of San Mateo Creek taken by the owners of the Howard or Parrot Tracts. I have forgotten the amount of water that could be taken and beneficially used by them on such portions of their estates as are riparian to San Mateo Creek. I worked it out with regard to the Parrot Estate once as to what I thought could be reasonably used, but I have forgotten
9016 what it is now. I have worked it out here that assuming that they could use a miner's inch to 7 acres, that the amount of that right would be 65½ inches, or .85 million gallons daily. That is something less than two acre feet. The water might not be all used for irrigation, you know, on the Parrot Estate; it might be subdivided into villa lots and used that way. It has not been; of course we are assuming a certain duty here. As a matter of fact, places like that use considerable water.

9017 The amount of water that has been delivered by the company under the obligations contained in the various agreements on both sides was something around 800,000 gallons per day, and I made a deduction of 900,000 gallons to cover that as not being chargeable against San Francisco. That was not the 900,000 gallons that I mentioned in the Railroad Commission proceedings; that 900,000 in the Railroad Commission proceedings was simply my guess at the low water flow of San Mateo Creek; it was simply based on my knowledge of that territory, and had not really any bearing on it; the 900,000 that I spoke of deducting are the uses that I made from the system outside of San Francisco.

9018 In making my statement as to the possibility of reproducing rights on Alameda Creek, I assume that the land owners there would be in a belligerent attitude even if the company had not taken their water as they claimed; my frame of mind would be warranted from the fact that when the Bay Cities Water Co. went into the Santa Clara

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Valley, although no water had been taken there at all, they found a bunch of farmers that were very hostile. I have gone through that experience myself. The Bay Cities Water Co. tried to buy some rights, and they also tried to lower the water plane without compensation; the same conditions would prevail in the Alameda system to my notion, that would prevail in the San Mateo system; it is not conceivable to me that during all this period of years this water would be allowed to run free and be available there; certainly with these big cities and centers of activity, and all that, and these large tracts of land available, there would have been appropriations and uses of that water there that would have to be condemned at this time; there is no doubt in my mind about it. I do not mean that the Spring Valley Water Co. retarded the growth of the country. It simply means that it has been put to use by others. It has been the defense of the company in this recent litigation that the pumping it has done to date has not materially damaged the Niles Cone lands, or interfered with the proper irrigation of those lands at all—and that is not all—that that water would be appropriated for other uses at this time if it were not in the Spring Valley. I believe that the cost would be excessively high regardless of what the owners of these Niles Cone lands could show as to damage to their lands from the 21 million gallons daily diversion.

9019

ONE HUNDRED AND TWENTY-FOURTH HEARING.
MARCH 27, 1916.

Witnesses: F. C. HERRMANN for Plaintiff.
F. P. MUHLNER for Plaintiff.

(Certain corrections noted in the transcript).

Witness: F. C. HERRMANN for Plaintiff.

9021

CROSS EXAMINATION BY MR. SEARLS.

Herrmann

Referring to page 10 of my exhibit; I mentioned the Beckwith-Coult sale of 2,000 gallons of water; I would not want to use that alone, but I think it has bearing together with all the other data that is available. The data from Southern California I got simply in conjunction with Mr. Anderson. He did the field work, but I am more or less familiar with conditions there, having lived in Southern California for about three years. The Glendale case is a Railroad Commission case, and the Sierra Madre proceeding is a court record. The Glendale case, it is my impression, was a sale, and involved only a small amount of water, less than a million gallons daily, I think. It was a fractional part of a million gallons.

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9023 The Phillips-Osborn sale was for 1,000 gallons a day, and the Los Gatos gravity supply to the San Jose Water Co. is an old purchase, about contemporaneous with the purchases of the Spring Valley.

9024 In paragraph 5, where I mentioned the Saratoga gravity supply, and that minor rights to the same were purchased in small parts at various times up to 1913, I mean by minor rights there the claims of some minor heirs that had to be bought, which are parts of the same right. My recollection is that the money paid to these minor heirs was a matter of a few hundred dollars, being a small amount in proportion to the amount paid for the original supply. My statement to the effect that it would be impossible to purchase those rights for anything like the sum paid for them in 1887, is merely my conclusion. There are no recent purchases of water in any quantity in that neighborhood that I know of that would justify such a conclusion.

9025 I think it is true that if you are going to buy a few inches for the domestic supply, you are apt to pay more for it than if you are buying a whole system, and I think it is indicated by the estimates I have made for these small rights, and the estimates I have made for larger quantities. I do not think that the sale of irrigation rights in the San Joaquin Valley is comparable as a basis for a valuation of the Spring Valley water rights. The irrigation use is larger during the period of flood flow; it is used for only a matter of 200 days, or thereabouts, and is not so important in any way to have a continuous service, reliability of service. If the water fails for periods of a week, or two weeks or more, there is not much damage done. On the other hand, if in a dry year the supply falls to say 60% of what you get other years, it is not a serious matter so far as irrigation is concerned, whereas, it would be a very serious matter so far as domestic supply is concerned. If the use were there, and if the demand were in proportion to that of the Spring Valley rights, there might be something said along the line of having to store the water in the San Joaquin, just as they had to do in order to develop the Spring Valley rights. Also, the potability of the water has no part at all in irrigation supply. There is no doubt but what the streams that come down from the Sierras carry impotable water. It is not used by every town along the line as a basis for domestic supply, nor does the City of Modesto use Tuolumne water for its domestic supply. As a matter of fact, the water that is used by the City of Modesto is taken from underground supplies.

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Questioned by Master.

The water has the pollution from a number of towns above, and from mines, and also it has impurities due to the cyanide process. Along the canal of the Modesto District in the period of low water flow, it is absolutely impossible to use the water of the Tuolumne River. We haul water from springs and other places to the ditch

tenders' houses out on the main canal, as there is no water in wells, because they cannot use the low water of the river.

CROSS EXAMINATION BY MR. SEARLS.

The town of La Grange gets the water in the flood period through the power company, and in the rest of the year they will get their water from springs and carry it. The claim of the irrigationists is that every drop of water in those streams is needed for the present and the future development of the valley. The low water flow is practically nothing down there, and they do not use it at all for irrigation. The Modesto and Turlock districts are building storage reservoirs in order to give them later irrigation. As it is now, the water from the Tuolumne goes off of the dam, which means it has gone down below their needs some time in July, and the result is they are very short in late irrigation. The purpose of the reservoirs they have built is to take the water when it is available in flood, earlier in the year, and through having additional capacity in the canal, store that water in those reservoirs, and use it after the water goes off of the dam, after July, so that they may get one more irrigation a year. They don't hold it over the year. In other words, it is not truly storage reservoirs in the same sense that these Spring Valley Reservoirs are. The Spring Valley storage is very much more expensive than an irrigation supply. The Spring Valley water supply for that reason should be of less value; they are certainly not comparable. You don't have to use the water throughout the year and store it on that account; the Turlock and Modesto Districts are seriously considering the question of the Don Pedro Reservoir, which will cost them perhaps \$5,000,000 or \$6,000,000, in order that they will get more and sufficient water to utilize and develop their territory and have water available throughout the entire irrigation period, which is not the entire year; it is seldom more than half or two-thirds of the year—200 days, sometimes it goes to 240 days. Of course that depends entirely on the climatic conditions. I don't see how you can compare the two.

The fact of whether water rights where comparatively little storage would be required to get the water and use it all the year around if necessary would be more valuable than water rights where you had to build expensive dams and store practically the entire amount, depends entirely on your market, and all the other factors that go with it. I have used the value for water rights for irrigation supplies as one of the yardsticks by which you can determine the value of the water rights in question. It is not the only yardstick. Personally, I believe that water rights used for irrigation, certainly in the central parts of the State, are never as valuable as those used for domestic supply, because of the fact that the reliability does not cut such a figure, nor the potability, nor the time of use, the necessity; those various factors all enter.

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My impression is that some of these California water supplies I talked about are potable and some of them are not, and the question of potability has not been a factor in determining the value of those irrigation rights, but it has been a factor in the value of these Spring Valley rights. I have certainly taken potability into consideration with regard to the valuation of the Spring Valley rights; I have not separated the different irrigation rights as to which are potable and which are not. Those that I am familiar with are mostly not potable. In taking those figures, some of which are higher than the figures I placed upon the Spring Valley rights, I considered the factor of potability so far as that is concerned.

9030 In using my price regarding the Tulloch Ditch right on the Stanislaus River, which was purchased in 1910, I used that in comparison on the basis that the price of \$18,550 per million gallons daily would be comparable with a supply uniformly available throughout the year. This does not differ from any of the other irrigation rights which I have mentioned, with the exception that there may be some in Southern California that are potable.

9031 The flow of 86½ million gallons daily is the maximum capacity of that ditch, is 134 cubic feet per second, a period of probably 200 to 240 days per year. In the low water period you would probably not get anywhere near 134 second feet. You could expand that over the year so as to get 86½ million gallons daily, but if you did not do it, I think it is more than probable that the annual supply would be considerably less than that which is now furnished by the Spring Valley Water Co. I am not as familiar with the Stanislaus River as I am with the Tuolumne, but the conditions are probably the same; as a matter of fact, storage is now done on the Stanislaus River by adverse rights to the Tulloch Ditch, and my estimate would be that the low water flow would be very, very small.

9032 The State Engineer, whose figures I have used, found there were 39,450 acre feet per year, and that is through this irrigation period of from 200 to 240 days. That may still be flowing, and still not run any water at all in the low water period. I could tell you by simple computation what that would be equal to for 365 days, but that in no measure would tell what did flow there in the low water flow. That ditch is used for irrigation purposes largely. Its use was during the irrigation period, and I don't know what it was in the low water flow. The fact that you divide the total acre feet by the necessary factor to distribute it over the 365 days, I don't see would indicate anything. It indicates the amount of water these people did divert, and if they wanted to store that and use it 365 days per year, the amount they could use per day would be something less than this, but they would be entitled to take that amount and store it if they wanted to. Computing the amount that would be on the basis of a 365 day use, with-

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out considering any amounts of losses or the cost of storing it, is, I think, 34.8 million gallons daily. The purchase price of this right was \$18,550, which included some structures, I think, in a very dilapidated condition, but I don't know.

Mr. Dillman: Those works at the Tulloch Ditch consisted of a rubble diverting dam in the Stanislaus River at Six-mile Bar; of conduits, part ditch part flume, and part tunnels out of the canyon; all of the ditches were rebuilt, and the tunnels enlarged in the present works after they were bought; a great many miles of distributing laterals, some of which are in use yet, and will be and are a part of the permanent system. 9033

The enlargement of the tunnels was a very large factor when the transfer was made; if it had not been for that possible enlargement, they would not have sold anything. The water rights were purchased for the purpose of enlarging the plant, for the purpose of irrigating 140 miles of ground, whereas they only irrigated about six miles before. 9034

I don't remember that I appraised these same rights before the Railroad Commission at all. I am willing to appraise them now. They are rights far in excess of the 134 cubic feet per second capacity of the ditch, as stated by Mr. Herrmann; the rights are the rights of the Stanislaus River, and they are today taken through canals of a capacity of over 2,000 feet per second, and can, by storage, be increased to a permanent right of that amount, or possibly more. I think those rights are worth a great deal to the district. If I discussed it at all, I don't doubt that I said they were worth \$2,000,000. I think they are. I am willing to say so now. 9035

CROSS EXAMINATION BY MR. SEARLS.

Mr. Herrmann: I don't know whether that \$18,550 was paid in bonds, or not. All I have is the statement of the State Engineer. Mr. Dillman, in his testimony, said \$650,000—without any qualifications. I don't think that this price of \$18,550 is more comparable with the value of the Spring Valley water rights than the figures in the Montecito matter. I have given here values both very high and very low, simply to have everything available that I could find, and I tried to be perfectly fair in the matter. These very high values might be some indication as to what the rights of the Spring Valley Co. might be worth, but certainly when they got so very high, I didn't consider them. I won't say that much for the Tulloch Ditch rights, because I don't think they are comparable at all, knowing the water as I do know it over in the Sierras, and knowing that there are certain adverse rights up above, and knowing that the principal use of the water over there is irrigation. I cannot see that it is comparable. 9036

Questioned by Master.

One cubic foot contains $7\frac{1}{2}$ gallons; in 24 hours there are 86,400 9037

seconds; 86,400 multiplied by $7\frac{1}{2}$ gives 648,000; a second foot is about 648,000 gallons daily. I think the reciprocal is $1\frac{1}{2}$, so that to get million gallons in terms of second feet, you multiply the number of million gallons by 1.55.

Mr. Metcalf: 1.547 is the exact point. One cubic foot per second is equal to 646,317 per day.

CROSS EXAMINATION BY MR. SEARLS.

Mr. Herrmann: There was a small quantity of water involved in the condemnation proceedings in which Judge Conrey presided. In that proceeding there was included developed and undeveloped water rights, and he put \$270,760 per million gallons on developed water rights, and also he put a price half that amount on undeveloped water rights. He put the price in terms of miner's inches, and I have transposed them to those figures.

9038 The crops irrigated with the water from Kewen Canyon, were citrus crops. On page 15 I state results eliminating the purchase of Montecito. Of course, I think it wants to be born in mind, but I think it is a very high price.

The amount of water involved in the Glendale case I think was $10\frac{1}{4}$ miner's inches; it was a small amount. I do not know to what use the owners of the water in the Glendale case, and in the Sierra Madre case had put the water before it was purchased by the City of Glendale and the City of Sierra Madre, respectively, but my recollection is it was irrigation, and I presume, citrus crops, because that is a citrus country.

9039 I think I know something about the value of water rights in the Imperial Valley, but there are no sales down there. There are mutual water districts, but I did not attempt to find out what the value of those water districts would be. I should say that the measure of the value of that water right is the value of the land as it is today, because before that water came in, that land was all obtained for from \$1.25 to \$4.25 per acre; there is nothing but the water right that has given it the value it has. The quality of the soil has to be there somewhat to make it worth while; the soil and the water both count to produce the crop, but the soil will not produce the crop without the water. The railroads that went in there, and the development of the market has something to do with the land values, of course, but what has held down land values there more than anything else is the menace of the river. Those mutual companies in the Imperial Valley are not all comparable to the mutual companies Mr. Anderson has used, because they don't own their own water rights, and they get water from the California Development Co., which company owns the water rights. If you could determine the value of their contract rights to that company,

9040 you might have something that is comparable.

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Mr. Greene: I can state that the only water right, so called, there, is an appropriation in the Colorado. Mr. Herrmann's statement as to the relations between the mutual companies and the California Development Co., is entirely accurate; it is entirely the same as the relation between the City of Holtville and the California Development Co., the water is taken to a given line and delivered; the delivery is paid for. There is no right in the stream at all. In fact, there could not, in the nature of things, be, because the stream is about 60 miles away from the point of delivery.

CROSS EXAMINATION BY MR. SEARLS.

Mr. Herrmann: Of course you understand that recent decisions have made it unnecessary to own stock in those mutual companies to get water in the Imperial Valley, and it was not a matter of excess water at all. As a matter of fact, I tried to get them to issue more stock—I had charge of the California Development Co. at that time—but they would not do it. They have limited themselves around the Imperial Valley—in District No. 1, to 3 acre feet per acre per year, whereas they have a maximum right from the California Development Co. to 4 acre feet per acre per year.

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If the farmers in the Santa Clara Valley had to go to considerable expense to get water, that capitalized expense, according to my idea of the situation, represents what that farmer could well pay for a water right, and I mean by that, what he could afford to pay rather than go ahead and bore for water himself. If he had to pay somebody else for that water right, what he paid would represent to him the value of the water right which gives him the water. If it were possible for him to purchase the water right from some company, or somebody else, he would be warranted in paying that much for it which would entitle him to have that much water. In other words, if he could purchase the water, and have it delivered on his land by the companies for that price, just as he wanted it for irrigation, that right would be worth that much to him. I think that is an indication of what a water right is worth, and I think it has its bearing on the question. It is not to be used solely; it is to be used together with all the other data that has been gathered. It is simply one yardstick. I have used the assessed value, and I made the statement that the assessment in Alameda County was \$12 per lineal foot.

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Mr. Searls: I will read part of a letter from Mr. Behan, Secretary of the Spring Valley Water Co., addressed to Mr. Olney, which states the difficulty the Spring Valley Co. has had with the Assessor in Alameda County. So far as Alameda County is concerned, he states that the original assessment was in the total sum of \$3,000,000, which was divided into two items; one covering Alameda Creek and its tributaries in Washington Township, \$1,500,000, and the other

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covering Alameda Creek and its tributaries in Pleasanton Township, \$1,500,000; he also states that the company filed suits to recover its taxes paid under these assessments, and upon the theory that the suits then pending might be decided adversely to the County, the District Attorney advised the Assessor to assess riparian values as appurtenant to the lands.

Mr. Olney: The Assessor assessed the lands, both those owned by the company, and those owned by everybody else along the stream, and so far as the records show, assessed them at their full value; he then assessed, I think it was \$3,500,000 in the manner indicated, as riparian rights. It was claimed that that was a double assessment. Whatever assessment should have been put on the lands, it must necessarily include the riparian right as incident to ownership.

Mr. Searls: Mr. Behan goes on to say as follows:

9045 "The Water Company owned practically all the lands, which
"were riparian to the streams in Pleasanton Township, and in order
"to retain the \$1,500,000 element of value in said township, the
"Spring Valley lands were assessed at double and treble the assess-
"ments theretofore made against said lands; in Washington Town-
"ship, however, and particularly the region below Niles, the Water
"Company owned comparatively little land riparian to Alameda
"Creek, and to accomplish the result recommended by the District
"Attorney, the record of riparian grants was employed, and each
"conveyance was made the basis for a separate assessment. By this
"means, the lands were twice described on the roll, one assessment
"being made against the owner, and the other against the Water
"Company for riparian rights as appurtenant to such lands. Riparian
"assessments were then adjusted to \$1,500,000, distributed through
"the list of grants, on the basis of \$12 per lineal foot on both sides
"of Alameda Creek below Niles."

I failed to find on the tax bills any reference to a segregation on a \$12 per foot basis.

Mr. Olney: There is no mention on the bills themselves of the \$12 per foot, but that is what it amounts to, and that is the way they got at it. They took \$1,500,000 and distributed it along the riparian rights below Niles; it would run just about \$12 a foot; on that basis they applied it to the specific tracts from Niles down to the bay. At the same time they assessed the lands, making a note that that assessment did not include riparian rights; they assessed the land exclusive of riparian rights.

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CROSS EXAMINATION BY MR. SEARLS.

Mr. Herrmann: I think that computation, if the Alameda Creek water rights be taken on the assessed value, has some bearing. For all I know, the water rights in Alameda County may have been assessed at 100%.

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The pumping cost of 10 cents per thousand gallons in 1887 is based on my knowledge of the advance in the art of pumping, and all that; it is an estimate in my mind as to what that cost at that time, knowing the conditions in general that existed in that country at that time, because I lived down there. I have no personal knowledge as to what it cost to pump water to these people at that time. I have no idea that the water in San Mateo Creek and its tributaries would be available for irrigation purposes, because the Spring Valley Water Co. is using it. If you were to presume that all the San Mateo County supply could be devoted to other uses, there is an alternative use for it other than domestic use; it could be used all through that foothill country, and the flat territory too, as far south, perhaps, as Palo Alto, for small orchards, homes, lawns; also for domestic uses. I think there would be other uses there if it were not devoted to the use to which it is devoted at the present time. If this supply were not devoted to the use of San Francisco, in my notion that would be a densely populated country down there now, and it would be taking practically all of that water for domestic supply; what little of it would not be used for domestic supply, would be used for truck gardening and for irrigation on the smaller pieces. The Alameda water could be used in a number of places.

The experiments made by the University of California at the Davis Station were made by the co-operation of the agricultural department of the University of California, and the irrigation investigations of the United States Department of Agriculture; the members of the irrigation investigations are not agricultural experts; they are usually hydraulic engineers, irrigation engineers. They are not farmers. The Davis farm is the central part of all experimental work in this part of the state of the Department of Agriculture of the University of California. It is a large tract, and they have their staff there. Their experiments are usually carried on on a comparatively large scale. As a matter of fact, that was the purpose of getting such a large area as Davis. Davis is pretty centrally located so far as the Sacramento Valley is concerned, and would, I think, represent conditions in the central part of the state. The conditions are quite different from those in the Santa Clara Valley, and the soil conditions might be quite different. In certain places it is common practice to irrigate wheat and barley. In Colorado, for instance, that is the case. Usually grains in this part of the state are not irrigated.

The usual crop to raise, when you get to the expense of getting irrigating water, is alfalfa, fruit, and vines, and sugar beets, not much truck gardening. Of course that is the reason in the end that I have drawn the comparison between barley un-irrigated and alfalfa irrigated, because that is usually what happens in the Sacra-

mento Valley, that the un-irrigated land is used for grain, and the irrigated land is used for alfalfa, or these other crops.

On page 25, where I say "There are numerous instances where
"land in the San Joaquin Valley which was worth \$25 per acre before
"irrigation rose to a value of \$150 per acre immediately upon the
"installation of irrigation works which would supply that land with
"water;" that was before there was conclusive evidence that the
crops could be raised. They had grown crops for some time, but not
for a number of years, say; there are certain crops that one year's
growing indicates nothing, and there are other crops that it takes a
number of years before you have any indication of whether they are
successful or not. Take for instance walnut trees, or crops of that
character. When those districts were started down there, everybody
thought it was going to be a vineyard or fruit country. As a matter
of fact, it has turned out to have very little of either vineyard or
9051 fruit; the crops that they expected to get have been materially different from the crop that they got. That is why I answered, it was not conclusive. I know particularly of several instances in the Modesto district; out in the Wood Colony land was purchased for less than \$25, and sold in smaller pieces at prices over \$150. I have also in mind some tracts in the Oakdale District. The Wood Colony was put on the market about 1902, and was purchased by A. B. Shumate, and one or two other associates. They put water on it, subdivided it, and sold it off in smaller tracts. They built a few ditches. They did not check the land, though, they just divided it. They had about 1,000 or 1,200 acres, and divided it into tracts of 160 acres down to possibly some as small as 40 acres; most of them were from 80 to 160 acres. I do not think they spent any money in improving the roads to the tract, and I do not think there has been any construction of roads or other public developments there, that is, ma-
9052 terially. All they did was to bring this water to the tract, and then subdivide and sell it. Only a year elapsed from the time they bought it and sold it all off, and in the course of two or three years a great deal of it was resold at considerably higher prices up to \$300 an acre, after it was checked and in alfalfa.

The other section was the Oakdale Ranch, just adjoining the Modesto District. Those figures were similar. The original acreage was about 700 or 800 acres, as I recall it, and it was in the Oakdale Irrigation District, and water had not been already supplied there
9053 from the district. I do not recall what interval of time elapsed there between the date of purchase and sale, but I have general information with regard to quite a number of transactions of that kind that happened. You can go into what is now the Waterford Irrigation District, where they are trying to get water from the Modesto Irrigation Canal. We have no water at the present time, but there is some of the finest grain land and almond land, that everybody be-

lieves in the future will be citrus land, that you can get anywhere from \$20 to \$75 an acre, that undoubtedly when they get water will be worth a great deal more; that is speculating somewhat, but I know the conditions. There has been no suggestion of higher prices yet, because they have not any water, and they have not any assurance of water; they have entered suit to get a right of way from the main canal of the Modesto District, and we have offered to give them a right of way for a matter of \$275,000, and they have made a counter offer of \$250,000, and there the matter rests. That is not an offer to buy water from us; that is an offer for the use of a right of way. I suppose they will be commencing a suit to acquire title against the City. They are parties in the Don Pedro Reservoir, and they are very anxious to assess themselves \$15 an acre to get storage in the Don Pedro Reservoir.

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With regard to that pipe line capacity, and the Ravenswood Booster; I looked into that as well as I could, and I would say that the Ravenswood Booster plant was completed in the latter part of 1912. They started pumping in January, 1913, and the upper half of the casing of the pump broke, and we had to send East because it was an Eastern pump, and operated it again in April, 1913, and after that we operated continuously for a month in April, and then after that we had considerable trouble with the runner. Apparently, from the records all of the pumps of Pleasanton were working between August 19th, and the end of the year 1913; by that I do not mean that they were working continuously, because I am going to look that up and see just what happened.

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Questioned by Master.

By the duty of water, you mean the amount of water that is necessary per acre per year for irrigation; of course that varies a great deal with the climate; some years, particularly dry years, much more water is needed for irrigation than in years that are not dry, and so you can only speak in general terms; the duty of water in the Wood Colony, as measured on the land, is between 3 and 3½ acre feet per acre per year; measured at the river it is nearer 5 acre feet per acre. In other words, there is that loss between the two, due to seepage and evaporation in the main canal, which is something like 25 to 30 miles long, and the laterals, and in the private laterals that lead to it. Of course, as you get further westward into the land that has sub-irrigation, there is less surface irrigation, and similarly as you get on the land higher up to the east, the surface irrigation is considerably more, but I think that the figures I have stated are a fair average. This price of \$25 an acre that I talked about was the price of land in that section before the Modesto District was formed, and they got water there. I think I have made a misleading statement there. The Modesto Irrigation District was formed in 1892, but they spent about 8 or 10 years in litigation, because of the

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9057 fact that they refused to pay the interest on their bonds, and the cases were carried to the Supreme Court, I think, the Federal Supreme Court, before they were finally made to pay interest on the bonds. In the meantime a part of the canal system was built, but a good deal of it was not built, so that there was a grave question in everybody's mind as to whether the thing would ever be a completed unit or not. When they finally had to pay, and they saw that it was going ahead, then these transactions occurred; although the district had been formed 8 or 10 years prior to that time, by reason of the litigation and all that, everything was stagnant. The \$25 price came before the water was brought in there, but not before the District was formed, because the District was formed 8 years before that. It was before the agricultural possibilities of the District had been demonstrated so far as irrigation was concerned, although of course they had raised grain in through there prior to that.

(The Master here inquired of Counsel for Plaintiff as to the nature of the water right at Lake Merced.)

9058 Mr. Greene: Originally a stream ran from the lake down into the ocean; that has been stopped by the construction of the dam, and whatever flow there is there now is a seepage flow; it will be a matter of argument as to whether the value of Parcel 25 as land riparian to the flow originally, and which would be riparian if the flow were permitted to continue now, ought to be considered, or whether the value of the water rights which Mr. Herrmann has considered, together with Mr. Anderson, or whether both are entitled to consideration. Personally, it does not seem to me it is open to argument that there is a water right there now as against the land below the outlet of the lake, the natural outlet of the lake where the dam is. Both of our real estate appraisers appraised it. We simply thought we would put all the information in regard to that that we could in the record, and leave it as a matter of argument, than for expert opinion. I do not think it has been controverted that the flow has been stopped, and that there originally was an outlet there by which the water flowed to the ocean.

9059 The Master: The impression on my mind is, where you own all the land which is devoted to the production of water, after you value that land, there is nothing more to be valued for water rights. I think when you come to present this matter of water rights, you will have rather a difficult task; it seems to me, the blindest proposition in the whole investigation, and I want your points made very clear, such that I can comprehend them.

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Witness: F. P. MUHLNER for Plaintiff.

DIRECT EXAMINATION BY MR. GREENE.

This table, which I have just handed the Master, represents the amount of the impounded money represented in each of the seven where the money was impounded. The first column represents the principal impounded, the second column the interest accrued, the third column the total of these two former columns, the next column represents the payments, and the last column the net balance. Then below is shown the amount of principal, and interest less payments on deposit in each of these seven banks at the close of business on December 31, 1915. The next to the last column represents the payments of taxes, and also fees of the Clerk of the Court, and payments made by order of the Court out of these funds. The figures in the last column presents the amount impounded in each one of these suits, and are in accord with the accounts kept by the Clerk of the District Court. The date, December 31, 1915, brings the interest down to that date; the interest is accruing in all of these suits monthly, and this refers only to the moneys that are in litigation.

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(Financial data impounded fund introduced and marked "Plaintiff's Exhibit 124 3-B".)

(Balance sheet profit and loss account, 1907-14, Spring Valley Water Co., introduced and marked "Plaintiff's Exhibit 174.")

(Counsel for Plaintiff here stated that in the 1907 case there was a decision on the part of the Court not requiring any impounding of excess funds, and that the accounts of the company make it extremely difficult to determine exactly the amount that would have been collected in the 1907-08 case had the ordinance rates alone been collected, and it was finally agreed with Counsel for Defendants to take the approximate amount found by Mr. Sharon's computations as 12% of the total gross income received; that would make the amount collected under the injunction about \$250,000, and for purposes of any calculation that may be necessary, it is satisfactory to Counsel to take the amount collected under the order of Court as \$250,000, and by that is meant the excess over the rates which were fixed by ordinance.)

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Mr. Muhlner: That corresponds with the first column of this table: "Exhibit 124 3-B", so that if it had been placed at the head of this list we would have \$250,000 under the second column. The reason for that is that the injunction was not granted, I believe, until October, or November, of 1908, and the collections were not made until November, 1908, and amount not impounded until December, 1908, so that is the reason why we lost three or four months collections. That explains the \$173,000 as different from the succeeding year of \$298,000, which is complete for 12 months.

9063 (Real estate and secured personal property tax statements, 1915, Spring Valley Water Co., introduced and marked "Plaintiff's Exhibit 175".)

9064 An analysis of the summaries and detail put in by Mr. Bailhache, with regard to the revenue and operating expenses, and taxes of the Water Company during the years in controversy, introduced and marked "Plaintiff's Exhibit 176".)

9065 Page 1 is a comparison of the revenue and expenditures "Plaintiff's Exhibit 124", and "Defendants' Exhibit 125", setting forth in columns the amount in money of the revenue in its details, and also the expenditures and taxes in totals, showing the differences between Mr. Bailhache's statements and my statement, and some of the reasons for these differences. For instance, on the first page, 1907-08, revenue, in the first column is the amount of water revenue for that fiscal year according to the Spring Valley's statements, and the second column is Mr. Bailhache's figures; the third column shows the increase of the City's figure from the company's figure, and to the right is an explanation of the reason for that increase.

Where it says the Spring Valley Water Co. accounts for actual charges, and the City accounts for cash received, it means this: That during a particular period the company charges on its books for water consumed, the actual amount consumed for that period against the individuals; in other words, that is the totals of the consumers' ledgers for water sold during that period, or the accruals of that period. Mr. Bailhache has taken the cash receipts for cash collected during that period. His would cover income of the previous year. For instance, meter rentals would not be charged until the latter part of the month, or of the year, and in turn they would not be collected until the succeeding period. That is true at the end of the year; it is true of any month, or any period. For that reason there is an overlap in the amount, that during a series of years might not materially total a very large difference.

9066 The 30,000 odd dollars collected in 1908 on account of 1907 business would be compensated for by a retarding of collections over a series of years, but not in the current year, for the reason that at the end of any period, the end of the month, when the accrual charges are brought on the books, those amounts would not be collected until the succeeding month or period; for instance, in June, the last month of a fiscal year, we would bring certain charges on the books; those charges would not be collected until the following month of July, which would be in the following fiscal period.

If you were to take the actual cash that came in during that year from the operations of that year, it would reduce Mr. Bailhache's figure of \$2,034,000 by approximately \$30,700.

My figure is \$28,000; Mr. Bailhache's \$34,000, for water sales, suburban water sales; the increase of the City over Spring Valley

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Water Co. of \$5,424 is due to the fact that in that year the operating expenses and taxes on some of those properties, formerly carried in the name of the Suburban Company, were deducted from the income, and our report of the income, or the revenue on those properties, included net for our figures, and Mr. Bailhache has included the gross figures, and has not made any allowance for these expenses and taxes. This revenue is obtained from the Suburban properties, both in rentals and water sold outside of San Francisco, and the expense incurred in conjunction with that work, and also the taxes on some of these properties are deducted from the total income from these properties, we reporting the net amount, and Mr. Bailhache not taking into the account these expenses and taxes. He did not take it into account in his statement of gross expenses; our gross expenses did not include that. In addition to these taxes down below, there were certain taxes in this \$5,424, the difference between the figures above. Neither do our figures for total operating expenses include any expense on these properties. Our rents and service connections are the same.

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Meter deposits are just deposits made by the consumers to guarantee the payment of meter bills; Mr. Bailhache has included those as revenue; the company does not consider that, and I am quite sure accountants and other people do not. They are all to be returned under a recent order of the Railroad Commission, with very few exceptions.

The next item is interest, deferred water bills. At that time we were given notes in payment of water bills by the United Railroads of San Francisco, and this is a small portion of the interest that was paid during that year. Mr. Bailhache has called it revenue; we do not so consider it, and it is my opinion that it is not revenue. It is miscellaneous receipts that do not figure in the revenue of the company. Those notes of the United Railroads were given in payment of water bills, and they are simply interest on deferred water payments. The next item is Lake Merced Silica Mine, which agree in total.

Cash discounts are the discounts that the company received on prompt payment of bills. We have included those in revenue; Mr. Bailhache did not. Sundry sales are sales of scrap iron and junk, etc., which we also include in revenue. Under ordinary conditions these sales would be credited to the operating account that the junk was taken from, but it is very difficult to account sometimes for scrap coming back from the various jobs, so when the scrap is sold, we credit sundry sales account.

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For operating expenses our figures are \$639,000; Mr. Bailhache's figures \$606,000, a difference of \$33,000. That comes about in certain deductions and omissions by the City in the detail of operating expenses which follows later on in this exhibit. The taxes

agree. The next line gives the total of operating expenses and taxes, and the line after that gives net operating revenue, including excess collected over ordinance rates, and before deducting allowances for depreciation or obsolescence, and the reason of the difference in these figures lies in the various reasons for the differences in the figures above.

9070 Turn-ons are the receipt that the company got from consumers for the turning on of water from delinquent water bills; the services were shut off for non-payment of bills, and this represents what the company received for the re-turning on of those services. The item under expenditures of presenting the company's case, page 2, 1908, 1909, represent the company's expense at their work in Washington on the various hearings before the Secretary of the Interior. Those figures do not include the 1908 temporary injunction hearing.

9071 Bad debts are accounts that have been written off. It is not exactly an expenditure, but it is a legitimate charge against profits of the company; in other words, it can be legitimately charged in the operating costs of the company. It is preferable to show it as a separate item than reduce your income by that amount; in former years it was so carried as a deduction to income, but in later years we show it under the Railroad Commission's provision as a separate item.

I am familiar with many of the rules of the Interstate Commerce Commission, and all the rules of the Local Commission of the State of California. They provide that these items shall be separately shown, and deducted from income.

9072 My figure of \$187,996 consists of the charges aggregating the 15% excess which is included in the water sales in San Francisco, as shown on the first item above it. Mr. Bailhache's figures, \$149,000, I think include the 15% impounded during that fiscal period, and that is the reason there is a discrepancy between his figures and mine covering the same fiscal year. During the period when we were charging for the 15%, from November 1, 1908, to June 30, 1909, we made 8 months' charges; the charges of November were collected during the month of December, and those December collections were impounded during the month of January. There was that lag during that period, so that when we came to the end of the period there was a part of the money which was actually impounded in this suit that was not accounted in that year. That was impounded in the succeeding months during the following period. It was accounted for in the same suit, but not the same fiscal period. We lost the money between July 1st and November 1st, pending the time when the temporary injunction was to be granted to the company.

9073 During that time we lost the charge of the 15% excess, as the temporary injunction was not granted until November 1. The ordinance rate was charged during that period. There is no 15% from July 1

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to November 1 included in this figure of \$187,000. I do not think the City has included it. There is a perplexing condition in that 15%, and it is this: That the company in its account charges for the amount of 15% accrued during the fiscal period under discussion; during the following fiscal period we not only collected that money that is charged in the previous fiscal period, but we also impounded it, so that the money we charge in June is collected in July, and deposited in August. There is the same condition with respect to this as there is with respect to the water sales up in the first line, the difference between revenue and income.

Mr. Greene: The 15% that is referred to is 15% on water sales, and not on all the water sales. There are some on which 15% was not charged, so that you cannot reckon that \$2,454,000 is 115% exactly of the computation. These are water sales in San Francisco, but there are some from hydrants. The water supplied to the City is not affected by that rate. It is domestic and commercial water.

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Mr. Muhlner: Referring to page 3, interest impounded in U. R. R.; that does not include interest on the 15%, or on the other amounts of sundry debts due the company in the revenue. Mr. Bailhache has included interest on the impounded money, also the interest on the United Railroads' notes in revenue. Interest on deferred bills is carried really by the amount of money that is working of your working capital; in other words, the company advances the money in anticipation of getting all that money back from the consumer; with bad debts it is an absolute loss to the company, the water has been served, the service has been given, and the expenditures have been made on that service, and it has been an absolute loss to the company, and all losses should be properly accounted in its expenditures, and among its operating costs. We claim a return on our working capital as working capital, not as advanced capital on deferred water bills.

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The only theory that I can imagine that the interest on the impounded money ought to be included as a portion of revenue is if you deduct it below in order to show the proper amount received by the company under the ordinance rates; there is no harm in showing it here as revenue if you deduct it below in order to show the net amount received by the company under the ordinance rates, only we do not show it in either place. I did not think it was proper to show it for the purpose of showing what the net income was that the company should have received under the ordinance rates.

Another item is in the operating expenses where there is a difference in the City's figures and ours of \$16,159. This difference is covered by an adjustment in the succeeding period by the City; it is due to corrections to the accounts on the first half of the fiscal year taken into account, and adjusted to the proper times that the expenditures were made; in other words, that is taken out of the fiscal

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year 1909-10, and compensated for in the year following; in other words, my figures have taken these adjustments into account. I charge my operating expenses up when the bills are incurred.

9077 Mr. Metcalf: I think that is proper practice with corporations and with waterworks companies, so far as I have been familiar with them, and I have known about the accounting systems of a number of waterworks which do account the revenue and the expenditures as they occur, and not as the collections are made and the bills are finally paid; that is the system which has been used here by the Spring Valley Water Co. The object of doing it is to have correctly accounted within the year in question the actual earnings as they should be, and the operating expenses as they should be.

Questioned by Master.

Mr. Muhlner: The Railroad Commission provide for that condition, that the accrual shall be brought on the books at the time at which the indebtedness is incurred, so that your complete liabilities and assets can be determined at any time. That is true also of the Interstate Commerce Commission. It does not apply so particularly to railroads as it does to other corporations, but to public service corporations other than railroads it particularly applies. That is true with reference to expenditures as well as revenue.

Referring to page 2 and page 3 with respect to that amount of 15%; I think the situation is the same on both of those pages.

9078 My figures, or the figures of the ledger, show the impounded interest for this period equals \$12,277.28, and that the interest on the United Railroad notes covering the same period is \$777, a total of \$13,054.28; Mr. Bailhache has a figure of \$18,968, a difference of \$5,914. I could not reconcile his figure for that; I didn't know how he arrived at it.

9079 Questioned by Mr. Olney.

Mr. Bailhache: There is a difference between my figure of \$18,968, and Mr. Muhlner's figure of \$13,054, of \$5,914; that difference might have been in the previous years. It might have been slow collections in getting that impounded interest in before. I can't tell offhand; it probably is adjusted on the preceding year.

9080 Mr. Muhlner: The \$319,497.60 represents the amount of the 15% charge, and it is the amount that the company figures, without any allowance for interest, it is going to get and impound. There is no interest at all. Throughout this computation I have included the entire rentals for properties both in use and out of use. I have included operating expenses in connection with properties in use and out of use, and Mr. Bailhache has deducted them. We both include all the taxes on the property in use and out of use. As far as operating expenses are concerned, on properties out of use, I left those operating expenses in, and Mr. Bailhache took them

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out. As far as taxes are concerned, we both left them in. Mr. Bailhache has omitted the operating expenses out of those out of use properties. In other words, crediting in the revenue, the revenue in the shape of rentals from the out of use property.

9081

Questioned by Master.

To explain the \$3,000 of bad debts in 1912-13; prior to 1912 the company accounted for its bad debts through income. That is, reduced its income by the amount of the bad debts, and reported its revenue net. In 1912, and the later years, the Railroad Commission provided that the gross income should be shown, and also the bad debts as a separate item in the operating costs. The smaller item of \$188 in 1911 is not water sales, but is made up of small sundry debtor items, sales of material or work done. The bad debts for water sales during those previous years were deducted from the gross amount of the income.

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Referring to page 10; the Spring Valley Water Co. made an adjustment of its operating expenses for that fiscal period 1913-14 for credits on the Crystal Springs pipe line of returned material, work that was done in prior fiscal periods, and apparently Mr. Bailhache overlooked that and did not include it in his operating expense; the same thing is true of the \$1,054 for injuries and damages returned to the company. One of our men was injured by the United Railroads, and we paid his expenses, and also his wages during a certain period, and later on in an adjustment with the United Railroads, we got that money back, but it was returned in a period subsequent to the accounting period, although I have taken it into account for the purpose of these reports.

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The Federal Income Tax also appears in the preceding statements on page 16. Mr. Bailhache in that case has taken the actual taxes paid, and not the taxes accrued during that fiscal period.

Page 7, service connections appear as an expenditure—there was a debit balance that year in service connections account. That means that it cost that much more than we received during that year to install services. We do not charge for service connections since the first of July, so that that item will appear under construction, permanent improvements; the company changed its policy on the first of July, 1915, after the period covered by these suits.

Mr. Searls: I would like to make a preliminary statement with respect to the deductions from operations as being proper charges to capital account; it would be our intention to add these charges to the construction account in figuring the cost of the plant, and also to add them to the total reproduction cost where they include items that have not otherwise been taken care of by our appraisors in the reproduction. The question will be as to whether the thing should be capitalized, or whether it is a proper operating expense.

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Questioned by Mr. Greene.

Mr. Muhlner: Referring to sheet 9; this is a summary and classification of the deductions made from operating expenses by the City for the fiscal years 1907-08 to 1914-15, showing under about 25 or 26 heads the various items that Mr. Bailhache, in his "Exhibit 125" deducted from operating expenses, charging some of those items to new construction, and eliminating the balance of the items from consideration either as operation or as construction. The sheets that follow give in detail the items as they appear here.

9085 The first item 1907-08 is an omission of various items in certain accounts of \$10,401.39. I will explain that in this way: That during the year 1907 the accounting system of the Spring Valley Water Co. was changed, and the result of changing the system among a number of employees who had been employees for a number of years was rather a difficult one, and many errors occurred in those accounts, and in the segregating of the accounts during that year; at the end of that year Mr. Cyril Williams, Jr., and I went through the accounts to make up a tabulation of information for him to appear before the Board of Supervisors for rate fixing purposes, and we found items amounting to \$10,401 that had been incorrectly charged during those 12 months; in comparing the statement for the 6 months ending June 30, 1907, and for the six months ending December 31, 1907, I apportioned those errors into the months where the original charges were made, although the corrections were not made until December of 1907; in that way the figures on the books will not agree with the statements to the extent of \$10,401, although the corrections are there and were applied to the particular period where the original charges were made. Mr. Williams was then an assistant engineer of the Spring Valley Water Co. This \$10,000 item should be properly left in operating expense for that fiscal period.

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Unidentified items; there are various small items that I could find neither vouchers for, nor any record of. Mr. Bailhache made exceptions to about 3,000 or 4,000 items, and there was some trouble in looking up some of the items, and many of them, particularly the very small ones, I did not bother with.

The Storrow report on Lobos Creek is a report made by Mr. Storrow on the use of that water, and that was objected to by Mr. Bailhache.

9087 The next item is lithographing; 2,000 copies of the Tuolumne system. During the fiscal year 1908-09 Mr. Schussler prepared a report for the company on the Spring Valley system, and also the Tuolumne system. This particular item was for the lithographing of the maps and other exhibits in that report, and there are other tabulations in that report; two or three items appear below that, Schussler Report, 1,000 copies, \$623, and lithographing other maps on that same

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Schussler Report, \$447.50. These items should have been together, and it was an error here to separate them.

If I remember correctly, the portion of the Tuolumne system in the report was insignificant. It was comparatively small in comparison to the other items in that report.

The item "Copies of Municipal Reports" refers to a complete set of these reports purchased from Mr. Cyril Williams, Jr.; he had the only complete set of Municipal Reports outside of one or two libraries. My recollection is that Mr. Bailhache eliminated that, but I am not sure.

9088

In changing the system of accounting of the Spring Valley Water Co. in 1907 we encountered many difficulties, and as a result many of the items were incorrectly charged, and in December, 1907, after Mr. Williams and I had gone over the accounts to make up his tabulations for the city, we corrected and made proper segregations of those accounts. These corrections were made in December of 1907, but they applied over the 12 months of the calendar year 1907, so in these statements that I prepared at that time, and also subsequently, I worked back and charged against the proper months the expense that had been incorrectly charged in that month to a different account, and properly accounted for the expense in that month, thereby apportioning the changes made in December, 1907, over the 12 months of the calendar year of 1907. The \$10,400 covers about 10 or 15 different expense accounts which are operating expense wrongly segregated during the first six months of 1907. They were charged in the first six months of the calendar year, and corrected in the last six months. The total deductions, the total corrections, amount to \$36,096. Of that amount \$26,000 applied in the first six months of 1907, and \$10,000 of that applied in the last six months of 1907, and that \$10,000 represents money that the company actually paid out during the last six months of 1907. It is not a double charge. For instance, let me read an item here against Black Point Pumping Station; an error of \$416 was made in the footing of the page in the journal, and a compensating error was made in some other account. That correction was made in December, although it applied to a preceding month, and those changes spread over the period of 12 months we have accounted for.

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Mr. Bailhache: The explanation of that item is that in checking over the Spring Valley expense account for the year 1907-08 it was found that there was \$10,401.39 less than what their filed statements showed, and consequently this deduction of \$10,401.39 was made; it balances with their books, which makes \$628,831.74.

Mr. Muhlner: The same thing happened in subsequent years, although the adjustment is made by the city in those years. It appears on sheets 3 and 4, and Mr. Bailhache knew about it.

9091

Referring to the item of maps and mountings; from time to time the engineering department compiled maps on some portion of the system, and mounted those maps, and that represents the cost of the maps and map mounting at that time.

Mr. Metcalf: In that connection, your Honor, I would call your attention to the fact that Mr. Hazen, in making up his valuation, eliminated from the inventory such things as the maps and records of the company, and no value was placed upon those; in other words, we have not accounted any of those things in the construction or capital account, and have accounted them, therefore, as an operating expense, in the same way that much of the work would be done by the officers of the company whose salaries are paid as an operating expense, and of course no allowance has been made for those items in the shape of depreciation, in the columns for depreciation; whatever depreciation occurs has to be taken care of as an operating expense in the form of a renewal.

Questioned by Mr. Greene.

Mr. Muhlner: With regard to the apportionment of expenses under \$200; the Interstate Commerce Commission provides that the accounting corporation shall have the discretion of applying all expenditures of \$200 or less to either operating expenses or to new construction, as it sees fit. The Commission realizes the difficulty of properly recording and segregating items of such a small amount of money, and it provides that the accounting corporation shall have the discretion to the amount of \$200. The Railroad Commission makes no provision; it omits any comment on it, but I am quite sure that the Commission would allow that, because it is good practice among corporations, and especially big business.

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Mr. Metcalf: The same thing is true with regard to tools, and other small items. While implements of that sort which have a short life might be accounted to capital account, and then a depreciation allowed for the short term of life, it is very much simpler to account it directly as an operating expense and simply take care of depreciation as it occurs in the form of a renewal. That is the current practice in corporations. That was not valued in Mr. Hazen's appraisal. Even if accounted in the capital account, the construction account of the works, still those same items would appear from time to time as an operating expense, because of the fact that you have to renew them from time to time.

Mr. Bailhache: If I remember right, what I did was to take out all tools and implements that would exceed the life of one year. That is, permanent tools and permanent implements, and anything that would wear out inside of a year would be considered operating.

9093

The Master: Note in the record that this matter of maps—Schus-

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slar Report—amounting to \$29.75 is charged by Mr. Bailhache to capital account.

Mr. Searls: It is on page 52, I think.

Mr. Greene: Those were all eliminated.

Mr. Bailhache: I don't remember now what the reason was for taking it out, but I think it was considered in connection with the water rate case at that time; also the maps for the same reason. In a general way, all these items which related to the presentation of the water rate cases, and the presentation of the company's case in Washington before the Secretary of the Interior were eliminated. I can say that this was not with reference to the presentation of the company's case, or any case, at Washington; it was the correcting and bringing the records of the company, which were destroyed in 1906, down to date; the item of the Tuolumne system was simply a small amount of the total cost of that entire work of restoring those records.

Mr. Metcalf: The Storrow Report on the Calaveras and on Lobos Creek we charged to operation on the same account as the other records and maps. Of course, preliminary reports and charges of that sort should, strictly speaking, go into the cost of the structures, but it often does happen that reports which do not involve great expense are made when the work is not built, and would have to be carried for a long period of years, as in the case of this report upon the Calaveras work, which was carried for a long period of years; under those circumstances it often happens that they are charged into operating expense. The account for the Calaveras Dam was not opened until work actually began. Technically all these preliminary expenses should be charged into the construction of the dam.

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Mr. Muhlner: The Storrow Report on Calaveras Dam is entirely in exploration work; reports that cover portions of that, or other portions of the company's plant at the same time would not be included in the Calaveras costs, or in that exploration work; they would be carried as a preliminary study for either contemplated work, or a correction of the records of the company. That would be an operating charge.

9095

The next item was for cleaning up some of the Pleasanton property, and grubbing out the trees. We are at present doing that at Lake Merced where we are grubbing out the trees for fire protection purposes. That is a character of work that is being constantly done on the company's properties.

9096

Mr. Bailhache: Forestration and general improvement of property is all charged to capital account. I suppose that is the reason this item is put in there. It was possible to ascertain from the vouchers whether it was a replanting of the trees or an original planting when you could get the vouchers. Sometimes you could not get the vouchers. This indicated that there was a certain amount of work

done at Pleasanton in connection with the improvement of the property. The cleaning up of the property was not put into the capital account. A good many \$83's will make up quite a bunch of money. These items were arrived in a great many cases in connection with the application numbers. This happened to be application No. 108 which showed certain improvements, consequently this \$83 item was taken out. Whenever they are going to make any improvements amounting to any sum of money, an application is made to the general manager to allot a sum of money for that improvement, and estimates are made, and work is done under that work order; generally it is called a work order, but here it is called an application number.

Mr. Muhlner: Application No. 108 reads: "Proposed work at "Pleasanton; grubbing out trees; charge Pleasanton Wells; to im-" "prove the appearance and make lands more suitable for agricultural "purposes."

Mr. Bailhache: It says here "Improve appearance and make "lands more suitable for agricultural purposes", therefore, it is an improvement of the property. It was not cleaning up any rubbish.

Mr. Muhlner: The next item, \$100, was painting a chart for the water sales department. I could not find a voucher for that. I don't remember whether it was to replace a new chart, or to replace some other chart we had. Mr. Bailhache eliminated the item "Thefts and "shortages in water sales department". Those are all proper charges against operation and maintenance. They are one of the hazards of the business.

We are not subject to the Interstate Commerce Commission rules, but these rules were compiled practically on the basis of good accounting practice, and what is generally done by the big corporations throughout the State. The classification of the Interstate Commerce Commission rules was largely used as a basis for the rules of the State Commission here.

Mr. Metcalf: I might say that with the corporations I have had anything to do with a charge of that sort has always been considered a proper operating expense. I do not mean to imply that it was a desirable operating expense, but that sort of thing did happen from time to time, and the place to account it was into the operating expenses of the year.

Mr. Muhlner: The next item, W. C. Hayes, architectural services; that applies the same as in the case of Mr. Storrow. From time to time the company employs experts to give opinions and to make plans for contemplated work. Sometimes the work is not done, and other times it is. When it is done, we aim to take out of operating expenses, if we have charged these items to that account, these items and charge them to the construction. That is the character of expense which in a large company you are likely to meet from time to

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time necessarily. The next item on page 85 is for signs which were "no trespassing" signs, I think. The next item is hay and grain for the keeper at Lake Merced. Those two were charged into capital account.

9100

Mr. Bailhache: I can't explain upon what theory that went into capital.

These Lake Merced accounts may have been in connection with building a lot of roads, which they were building at Lake Merced at the time. All these other items were taken out, teaming, and so forth; quite a number of other items are here covering the next two or three months, items running up to \$1500 for building new roads, and that hay and grain was figured in as part of the expense. It says "horses for keepers"; and it says, "hay and grain, Lake Merced".

9101

Mr. Muhlner: My recollection is that Dalton, our keeper out at Lake Merced, has a horse that he uses to patrol the tract with, and this was hay and grain used for that purpose. I examined most of the vouchers in these cases. The small items I did not bother with. Mr. Bailhache took exception to 3,000 or 4,000 items, and it would have been almost an endless task to look up each individual item.

Mr. Searls: If Mr. Muhlner's statement is correct in that particular case, it was a proper operating charge. If it was hay and grain used for horses, used in construction, it was a proper construction charge, under our contention.

Mr. Muhlner: There are two items of disputed bills for cement in all the accounts, \$132.50 in 1910-11, and \$141.62; it was cement bought for various purposes which the company had no record of receiving, although ordered, and rather than have a long, lengthy dispute and legal argument, the company paid the bills.

Referring to Mr. LeConte computing weir measurements; Mr. LeConte was employed by the company in the completion of its records of water run-off and various coast streams in San Mateo County, and these represent his fees for these computations. It is my recollection that he did that work on San Mateo Creek particularly.

9102

Engineers' salaries—duplication, etc.; Mr. Bailhache eliminates \$9,000 from engineering salaries in 1912-13, and in another volume he takes out \$7,000 which was included in the \$9,000; in other words, he takes out \$7,000 twice, of which \$1,635.85 is a part. This figure represents surveys at Lake Merced and Portola. The balance of the \$7,000 was part of the engineering salaries on the report of the Secretary of the Interior made in 1912, and is covered by Mr. Bailhache in another part of his document for the same fiscal year. It is not covered by me in the item "Presenting Company's Case". It is a separate item in addition to that item.

9103

The item of \$50, was donation for the anniversary edition of the

"Star" or one of those papers. We have an account for donations, but this was reported separately.

The San Andres pipe lines studies for possible future extension is in the same line as the Storrow report. No construction work at all has been done on that. Most of the items on this page have been carried to capital account; most of the items on the other page have been eliminated entirely.

ONE HUNDRED AND TWENTY-FIFTH HEARING.
MARCH 28, 1916.

Witness: F. P. MUHLNER for Plaintiff.

9105

DIRECT EXAMINATION BY MR. GREENE.

In regard to an item of hay at Merced; the voucher does not give the information that I testified to yesterday, but the copy of the order, No. 6335, to Greene & Sons, Colma, California, does. It shows that two tons of oat hay, and 10 sacks of rolled oats, \$42.85, were delivered to Mr. Dalton's house, the keeper at Lake Merced, on the Lake Merced Ranch. Mr. Dalton uses a horse in connection with keeping trespassers off the property. That is not the only year in which he used the horse. Each year there are charges to that account.

9106

The item on page 11, Exhibit 176, Mulholland's fee, Portola Reservoir, was a fee paid him for a report he made as to the use of some of the water for the Portola lands and the Portola Reservoir. It has a similar bearing as the reports of Storrow on Lobos Creek, and Hays as to architectural services. The Railroad Commission provides as to preliminary reports of that sort, that they shall be held in suspense until such time as it is finally determined what is to be done with those accounts, and then charged to construction or operation. When construction work is done, along the lines of the report, it shall be charged to construction. If no construction work is done, it shall be charged to operation. They treat a suspense item of that kind so that it shall be separately shown on the balance sheet as suspense.

9107

In addition to the rule of the Commission, on page 17 of the regulations, in relation to the term "cost", there is also the rule that fixes it, which is the rule as to organization. As far as the items on preliminary cost are concerned, the balance sheet provides that those items shall be charged or carried in suspense until construction work is either done, or decided not to be done. It is an operating charge if the work is not done. There is no other way to dispose of it. As to the matter of putting it under general overhead, take for instance the preliminary plans for Lake Merced work, and you did work out

of Portola, you would not put the Merced work into the overhead on the Portola construction. I don't think that report of Mr. Mulholland's was for the purpose of supplying water to the Woodside subdivision, as that work was not done at that time. My recollection is that the report was not gotten out for the purpose of the subdivision work, but was a report on the use of the water at the Portola Dam.

9108

(Counsel for Defendants here stated that the item should clearly be eliminated along with the revenue from the Portola lands, but Counsel for Plaintiff was not inclined to make an admission on that.)

Take on page 11 of the classification of accounts, item \$16.60, a list of items on the asset side. This is the State Railroad Commission rule. It provides:

"Other Suspense: This account includes all debits not elsewhere 'provided for, and the proper final disposition of which is uncertain. 'It will include all such matters as expense of preliminary surveys, 'plans, investigations, etc., made for determining the feasibility of 'projects under contemplation. Should any projects be carried to 'completion later, such amounts shall be credited to this account, and 'charged to the proper capital account or accounts; should it be 'abandoned, such amounts shall be charged to 'corporate surplus or 'deficit'".

That is a profit and loss account, but in the operating expense; it is part of the operating expense of the company. It makes no difference whether it is charged in the operating expense, or whether it is charged as a direct debit against profit and loss. Suppose you had bad debts; bad debts are not charged against operating expense, but against profit and loss.

9109

(Counsel for Plaintiff stated that a concern such as this water company, or any other public utility enterprise, must, in the nature of things, make expenditures for preliminary surveys and matters of that sort for the purpose of ascertaining whether or not it shall make certain extensions or developments, and if it does make the particular development which is contemplated, then it is a preliminary expense as a part of the cost of that, but as many of those preliminary schemes are abandoned upon investigation, and the cost of making these preliminary reports is required in connection with the development and carrying on of the business, it is contemplated that they shall be simply charged up to operating expenses, otherwise the company could not legitimately go on and incur such expenses at all, and there is absolutely no reimbursement if the plan is not carried through, unless the company is made whole out of the rates. If it is charged to profit, then it is the equivalent of charging it to operating expense, because it cuts down the profit which the company would be normally entitled to, so it makes no difference whether you call it operating expense or profit and loss account.)

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9111

Mr. Muhlner: It would be true that general overhead is a capital account if the work is being done; if the work is not done, the loss is incurred by the company, you treat it and put it in the same category as any other loss. We could not charge to every piece of operation a portion of the general administration charges of our general office. We have 65 or 70 main operating accounts, and those are divided into 8 or 10 sub-accounts; it would be an impracticable thing to charge the general overhead to each one of those sub-accounts. We do it on a percentage plan as far as the engineers' salaries are concerned, but we do not do it so far as the general overhead is concerned. The rules of the Railroad Commission provide that that shall be charged as a separate item.

9112

Mr. Metcalf: Is it not a question of expediency and of public policy? As I understand it, it is. If you charge these expenses of projects, you do not develop into capital account; you are simply carrying them as a permanent investment, and continue to pay rates on them. I understand it to be the theory of our Commissions that it is wiser to amortize at once such expenditures, to get rid of them as an operating expense. If you attempt to charge it to profits, and not to operating expenses, with the idea that you will cut down the divisible expenses in that way, and draw a nice distinction there, as I see it, it is again contrary to public policy, because you are simply increasing the hazard of the business, the uncertainty of the man who puts his money in. As I see it, the expenditure is legitimately made, and it is perfectly proper that the investor be reimbursed either through capital account, or else as a direct operating expense, however you classify them, for the work done. It is true that you may make a number of investigations which will lead to one final bit of construction. I think it is true that often those expenses are included in the capital account as part of the preliminary expenses of the project which is finally adopted. For instance, an engineer always, or very often considers several alternative projects, and adopts one as the most economical and the most desirable. I mean that you might include alternative sources.

Mr. Hazen has done it again and again; also other engineers who have reported on those matters. Under those circumstances, I conceive it to be perfectly proper to charge into the project finally adopted the cost of alternative investigation. On the other hand, you would have other investigations of another nature, which perhaps lies more closely, or border upon the administrative problem more closely; those you may account, and corporations, as a matter of fact do account sometimes to capital account, sometimes to operating expense; it seems to me it is more conservative to account them as an operating expense. I think heretofore the cry has rather been that corporations were inclined to put too much into capital account, and not enough

into operating account; now that we are coming to have rating proceedings of this sort, the operating account is scrutinized as carefully as is the capital account. I think it cannot be denied that there are certain questions of accounting of this sort which might be included in the one or the other. They ought to be amortized either in the year's cost as an operating account, or else put into capital account. When you keep an item in suspense, it may not be allocated to its proper place for several years—after a rate fixing period.

Mr. Muhlner: That means that if you finally charge it to operation, you charge it to the operation of the year several years later, and not to the year in question. That is the reason they make the distinction of charging that to miscellaneous deductions from surplus, the reason being that if you did charge it in the current expenses of operation that year, when you charge it off, it would not be a true operating expense of that year, you would have to go back and correct the preceding year's operations, which you could not do, because your reports have been rendered, and your books have already been closed.

9113

On page 41 E-33, salaries of general officers, there is charged to this account the salaries of general officers, including the president, vice-president, general manger, secretary, treasurer, comptroller, auditor, and all other officers whose jurisdiction extends over the entire business, and whose services are not chargeable to any particular department. If there were special engagements for construction work, or for real estate purchases, you would charge a percentage of the general administration to those, but you would not take the ordinary operating officers of the company, and take whatever incidental expenses were made to construction, and allot their time to construction work.

Mr. Metcalf: It seems virtually that so far as the rating problem is concerned, your expense account must be allowed to earn a return; in other words, either you put the item directly into capital account, and there it is allowed a return, or else you pay for the item as an operating expense, and it requires working capital until the decision is finally made.

9114

(Discussion among the Master and Counsel in relation to the position of the city in regard to such items as Mr. Mulholland's fee on the Portola Reservoir Report, the Defendants' position being that such reports should be wiped out entirely, while the Plaintiff's position is that under certain circumstances such items should be charged to capital, and under certain other circumstances to operating expenses. In other words, that it is a legitimate expense for which the company is entitled to a return.)

9114-9118

Mr. Ellis: In the Antioch case of the Pacific Gas & Electric Co. before the Railroad Commission, the general administration account

of the Pacific Gas & Electric Co. was probably more typical of a wide range of charges than any other corporation in California; starting with the president and the general manager, they charge off a certain percentage to construction. When it comes to general engineering, where is charged all studies, and all electrical investigations, and so on, the major percentage of that is charged right off against the construction accounts. At the end of the period their procedure in general is that they will have an aggregate of charges which are taken out of these accounts, and which represent construction which they do not attempt to allocate directly to every specific piece of construction they have had during the year, but which they carry as an overhead. This is somewhat similar in type to the 10% general overhead for engineering used in the appraisals.

9119 Mr. Muhlner: We can understand the attitude of the Pacific Gas & Electric Co. doing that. It is for this reason: They have expended a very, very large sum of money in the last few years on construction work, and their organization is a very large organization. If they were charging their entire amount of salaries to operating expenses, their net income would be much smaller than it is reported. One can very readily see they would prefer minimizing their operating cost, and increasing their construction cost to gain that preference.

Mr. Ellis: I don't think it is a question of preference; it is a matter that is practically necessitated by the rules of the Railroad Commission.

DIRECT EXAMINATION BY MR. GREENE.

9120 Mr. Muhlner: The next item is a preliminary study for tunnels on Alameda Creek and Calaveras, as to which no determination has yet been made, and in all probability the work will not be done. The next item is a report to see whether a railroad over the San Mateo property, I believe it was, would be a benefit. The next item, directors fees for the Suburban Company. This is a subsidiary company through which many of the properties were bought, and I believe every year they hold a meeting. It owns no property, but is simply kept up for the convenience of the main company. The company keeps it in existence for the purpose of protecting titles passing from the Suburban Co. to the main company. The Spring Valley Water Co. own all the stock. In this case Mr. Bailhache has charged the directors' fee to construction; in another case he eliminated the fees. This expense did not bear at all on any purchases of real estate. The original purpose of the company was to buy real estate, but it is not the present purpose. The only present purpose of the company is to protect the titles in the transfers of the properties that were bought back in 1885 or 1890, and those titles were transferred, I believe, in

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1907. The company furnishes practically no useful purpose, but the expenses are nominal. I don't think they amount to more than \$40 or \$50 a year.

The next item, iron plates, storage and transportation: In 1906 and 1907 we bought a considerable amount of iron in the form of iron plates from Eastern firms, and had it shipped out here, the company intending to build pipe lines. The orders were placed prior to the earthquake in 1906, and the material arrived subsequently to that. The fire came along, and the plates were stored temporarily in the Risdon Iron Works, who were to make them up into pipe. Later on the Risdon Iron Works went out of business, and it was necessary to transfer the plates to Millbrae, and this item represents the cost of transferring. It is charged by Mr. Bailhache to capital account. There were a very, very small number of these plates used in the park recently. This allotment of pipe amounts to about \$47,000, and they are still down at Millbrae. That represents the history of the transaction, and as far as my records go, that is the disposition made of them. 9121

Mr. Metcalf: To add that to capital account, and use it in construction, would be rather abnormal accounting. That would have been a case of inflating your costs. It seems to me it is more in the nature of a rental which grew out of the fact that you did not use your material immediately. If it were to stay in the cars on the railroad track, and you were charged with demurrage, the demurrage would not be added to the cost for a period of four or five years. It seems to me it is a very substantial item, and it is not the sort of cost you ordinarily have to meet in construction. 9122

Mr. Muhlner: It is not an added cost of the material, because had that material been made into pipe, and used, it would not have become a part of the cost of the pipe, and if that material had been made up into pipe and the pipe stored in the yard, that cost would not have been added. It would have been an inflation in the cost of that material. The fact is that a large portion of this is the rental cost of the Risdon Iron Works.

The next item, water supply records of other cities, \$123, Mr. Bailhache charged to capital account.

Page 10, Item 25, floral pieces; one was for Mr. Kellogg, former attorney for the company; one for Mr. Chas. Webb Howard, former president of the company; and the last item in the year 1911-12 was for Mr. Shay, a former attorney for the company. Mr. Bailhache treated those as donations. 9123

The next item was for various trips by the Boards of Supervisors and Health, and also some inspection trips by officers of the company around the properties. Those trips were made at the requests of the Boards of Supervisors and Health.

9124 The item for transcribing testimony was for testimony taken at the various meetings held by the Board of Supervisors during the rate fixing period.

Mr. Bailhache: I objected to that on the ground that they were probably done with the idea of contesting the ordinances, and therefore that it was a rate suit charge.

9124-9126 The item of albums, \$614, was for pictures of the company's properties which was prepared in albums for the company's officers. There was nothing in them about the Hetch-Hetchy matters. They might have used some of the lantern slides taken from these pictures in the Schussler lectures. Mr. Schussler, from time to time, has been giving lectures on the water situation in San Francisco, and this represents such costs for lantern slides, and the services of the lantern used, and such other incidental expenses of the kind used by Mr. Schussler. It was a campaign of publicity.

9127 The next item, funeral expenses, is for the expenses of burying employees who had practically nothing, and the company paid those expenses for the windows. That is ordinary corporation practice; they all do it.

The next is relief maps of properties which are the maps in use in the office, and which were absolutely eliminated by Mr. Bailhache.

Mr. Metcalf: An essential part of the cost was the making of models from which the photographs were made. The models are constantly used in the office. Mr. Eastman has one on his desk in front of him. It is the same as "Exhibit 1" here. They were made primarily for the operating department.

9128 Mr. Muhlner: San Carlos connection, Crystal Springs property: We rent some property from the San Carlos Syndicate in the Crystal Springs watershed. It is only a temporary leasehold, and this was a connection which was part of the arrangement of that lease, and should be considered as a temporary connection. True it was a construction item, but in as much as it was only temporary, we carried it into operating expenses. Mr. Bailhache eliminates it. We still rent that property. It is a question of whether charging this directly in the year when the expense was made, or allotting it over a period of 5 or 10 years. The practical thing to do is to charge it when the expenditure was made.

9129 The Spring Valley Water Co. subscribed for \$30,000 worth of Panama-Pacific International stock. I don't know what the attitude of the company was, or what was in the mind of the directors at the time they voted that subscription. Thousands of people around the bay cities bought stock; I, myself, had some of that stock.

9130 The Herrmann survey was on some San Mateo property, which was not a very large item. The next is telegrams and cablegrams to and from Mr. Bourn, who was in Europe.

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Mr. Bailhache: I think I eliminated that, but I don't remember.

Mr. Muhlner: The next item is the Hazen report on the treatment of water in the various reservoirs, and the next is a similar report by Von Geldern, which was in connection with the Pleasanton water development, made in 1911.

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Mr. Greene: The Von Geldern report was on the subterranean water supply, present conditions and future development, as of 1911-12. Mr. Von Geldern was engaged by the company at the time that the Lilienthals commenced a suit to enjoin the use of the Pleasanton waters. This item is the payment for his report. The same is true as to the Doctor Branner report, appearing a few lines below.

Mr. Bailhache: The basis for the elimination, as I said before, they were subsidiary in connection with the development of the properties. I did not eliminate all items that went into development of the property. If I eliminated it, I took it out as being a matter in connection with the preparation for the rate suits, or on the general water fight. This item on page 62, volume E, exhibit 125, was eliminated because it was supposed to be in connection with preparation for the rate case, or on the general water fight.

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Mr. Muhlner: The next item of \$31,000 for reports compiled by employees of the Spring Valley Water Co., on the properties of the company, for the purpose of presenting its case in Washington. This was in addition to that other account of presenting the company's case. It was not in connection with the fight against the Hetch-Hetchy, and it had nothing to do with the condemnation case. Many items contained in those charges were for the preparing of reports, which the company is still using, on a lot of hydrographic work, records which the company did not have at that time, and which both the City's and the Company's engineers were very anxious to get. Also, Mr. O'Shaughnessy requested the company to make very large expenditures to compile hydrographic work, both for the City's use and for the company's use. Mr. Eastman expended much of that money, but not to the extent that the City wanted.

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Mr. Greene: The expenditures in the Washington matter I think are amply justified. The company was protecting its situation here in some cases of utmost importance, and it seems to me that expenses incurred in the protection of a utility's situation are justifiable operating expenses. At any rate, we do not concede that those expenses are not to be taken into account during that period, by reason of the attitude of the City in bringing Hetch-Hetchy water in here, and the attitude of the company in regard to rates, and so on. We will contend as vigorously as we can that expenses of that sort ought not to be crossed off.

Mr. Searls: In view of the company's attitude in supplying

water to the City, and its vigorous and vicious attacks against the City in its effort to prevent the Hetch-Hetchy water from coming in here, we shall vigorously contend for the exclusion of those items.

DIRECT EXAMINATION BY MR. GREENE.

9135 Mr. Muhlner: In the figure below there is a figure of \$5,631 that I am sure includes items of salaries that would, in ordinary instances, have been included in ordinary operating expenses of the company. That \$5,631 is in addition to the \$24,395. I looked into
9136 some of those items for the purpose of verifying a duplicate deduction of \$7,000 or \$8,000 as against \$9,000 in engineering salaries, and I do know that there are some of the regular employees included in the items here of \$5,631 and \$24,295. Just how much I cannot say offhand.

The next is work for the City on the sale, and that is part of the cost that the company expended at the time when the last sale of the properties to the City was under consideration. The next item is the Wagoner report on water supply. I don't remember just what that report was for, but it was in conjunction with other reports the company had on its water supply. The next item, printing mailing president's letters and reports, is due to the fact that from time to time the president issued reports to the stockholders, and those reports are mailed, and also various letters stating the position of the company.

Mr. Bailhache: My record shows that there were about 1,500 copies made of the report that year, and I don't see any reports mailed in any other year charged in; it seems to have been in connection with the general water fight that was going on in the year 1912-13, and so I eliminated it.

9137 Mr. Muhlner: Through the report here you will find various references to printing and mailing. Perhaps not reports of the president under that caption, but it goes on from year to year. The president is issuing his annual statement to the stockholders, including the balance sheet. The next is the elevator man's uniform, which Mr. Bailhache objected to on the ground that it was a donation, and not an operating expense. The next is San Francisco Convention League: During the time just prior to, and during the course of the Fair in San Francisco, the company subscribed to the organization known as the San Francisco Convention League. That is on the same basis as the Panama-Pacific subscription.

The legal expenses, Britton & Gray, covered services in connection with the representation of the company in Washington in connection with the Hetch-Hetchy.

The next is engineering department salaries. The portion reading "See attached" refers to the detail of the pages for 1912-13. If you will turn to 1912-13, page G, about the middle of the page; dis-

tribution of engineering department salaries from September to December, inclusive, etc., in that place Mr. Bailhache took exceptions to items amounting to \$9,738.78, eliminating them entirely. In another portion of the volume he eliminates \$7,268, all of which items were included in the \$9,738. It was a duplicate elimination. Some of it is hydrographic work, and some of it is work on engineering reports for the Secretary of the Interior. \$5,631 represents the cost of the reports by Mr. Herrmann and Mr. Schussler, and Mr. Elliott, on the presentation of the company's case in Washington; \$1,600 of that represents contour survey at Lake Merced, and a survey at Woodside. \$542 represents hydrography, \$480 represents relief maps, \$170.10 atlas maps, \$18.20 a charge against Crystal Springs Pump. General engineering department, the general help in the office for general record work, \$1,262.65. Reports of Mr. Dockweiler, and other City reports, \$462.80, and other reports \$30.95. On page 82 it shows \$7,267.08 as the total amount taken out twice by Mr. Bailhache.

The next item, engineering department surveys, \$283, is for general surveys. The company always is sending somebody out to locate a pipe line, or to find a property line, or something like that, and that is what those are. It does not come in in the way of preliminary work. A pipe line may be lost some place, and we send a surveyor out to find it. They included the straightening out of property lines also. Mr. Bailhache eliminates them; on this page they are practically all eliminations, that is on page 72 or 73. That \$283 was not for Pescadero. It was Mr. Dillman's survey, and he was an employee of the engineering department of the company.

The next is moving pictures, 1913-14, and 1914-15. That was in connection with the publicity work, and also in the campaign when the City was to buy the properties. The next item, \$750, is a subscription by the company to the land show held in San Francisco, and also the cost of some jars that were made in connection with an exhibit at Pleasanton. Mr. Bailhache called that a donation. The next item is the cost of paying coupons, and it represents the cost of paying coupons, bond interest, and the exchange on the bond interest where that interest is paid in New York, and the company has to pay the exchange when the bond is presented here. It is not a part of the interest account, and the Railroad Commission rules provide for it in general expense. The Railroad Commission rules became operative on January 1st, 1913, but the company's policy was not altered particularly. The rules were practically the same rules the company was operating under at that time, and since 1907 when the system of accounting was changed. There is a reference to it on page 42 of their rules, under E-35, under the heading of general operating expenses, miscellaneous general office supplies and expenses.

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Referring to page 9, item No. 1, general salaries: That is a matter that was referred to a little while ago. It represents Mr. Bailhache's estimate of the portion of the general salaries he figures should come out of operating expenses and be charged to new construction, or permanent improvement. I think he estimates something like 44 and a fraction percent of the total general officers' salaries.

Mr. Greene: I call your Honor's attention to the magnitude of this deduction which starts in 1907 at \$11,600, increases up to \$32,000 in 1910, and over \$30,000 for all the balance of the period, a total of \$210,500 for eliminations.

Mr. Searls: Mr. Bailhache's claimed eliminations are set forth in Volume 1, page 1, of Exhibit 125, together with his reasons for the eliminations, as follows:—

“Method of Segregating Deductions from General Salaries, and Reasons therefore.

“The amounts to be deducted from General Salaries, as a charge to ‘Permanent Improvements,’ were arrived at by taking the proportion that ‘Permanent Improvements’ bears to the total of Operating Expenses and Permanent Improvements by the fiscal years in question. This shows that Permanent Improvements comprises 44.8175% of that total (see sheet 1). This proportion was deducted from amount paid in ‘General Salaries’ to the President, Vice President and Manager, Secretary and Assistant Manager, and their assistants (see sheets A, A-1 and 2).

“The general business of the Spring Valley Water Co., as it pertains to supplying water to San Francisco, is handled by two Water Divisions:

“A—The City Division, of which Mr. Elliott is head, comprising the city properties, distributing systems, reservoirs, etc.;

“B—The Water Division, of which Mr. Lawrence is the head, comprising the outside properties, pipe lines, reservoir systems, etc.

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“There is also a general business department known as the Water Sales Department, subdivided into Inspection, Collection, Bookkeeping, Building, and Shipping departments. These divisions and departments operate the business of supplying and selling water. The Executive Officers, are mostly occupied with matters of finance; the policy of the company in dealing with the city and general public; the acquisition of new landed and other properties; and the improvement and addition of, of the properties and structures already in use in different parts of the system. They also give consideration to the disposal of sundry tracts of lands which are being subdivided, or are to be subdivided, such as the Beard Tract, Searsville, Portola and Lake Merced lands, etc. These being properties formerly included as Permanent Improvements, but portions of which are not now required.

"For the above reasons the deduction of 44.7185% from salaries paid these officers and their assistants is considered extremely low, and the method used for arriving at the above figure seems the best basis for determining the amount so to be deducted.

"The Auditor, Assistant Auditor and Assistant Secretary also are required to give a portion of their time to matters pertaining to permanent improvements. Some of the matters which require their attention in this regard may be mentioned as follows: computing tax records and bills and adjusting taxes on landed property (which is a big item); checking and verifying outside reports and accounts of various kinds, pay rolls, etc.; paying on construction work; keeping lease accounts and payments on properties leased, various matters in connection with purchase of lands and betterments and additions to existing properties, etc. It was impracticable to get a basis for segregating the proportion to be deducted from Salaries of these officers and these assistants, and to make it low enough not to admit of questioning the same, but 10% was deducted, being per cent known to be deducted in similar cases."

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Mr. Bailhache: There were deductions of about that amount in other corporations I have looked into in the city here, for instance,—the Pacific Gas & Electric Co. wherein the auditing department deducts 10%.

Mr. Searls: "Chief Engineer and Consulting Engineer: A deduction of 90% from salary paid the above was made. This being based upon the fact that practically all of such officials' time is occupied in new work, also upon investigation of deductions made elsewhere covering officials performing similar duties.

"All of the above salaries are carried by the Spring Valley Water Co. under the title, 'General Salaries' and are one of the larger items of 'Operating Expense' in their deductions from Income, as applied against the City of San Francisco.

On the following sheets, Mr. Bailhache, I presume, gives the calculations which he had made in each case. They show the calculations giving the gross permanent improvements and operating expenses, and the percentages arrived at.

Mr. Searls: I think that represents our point of view, that if we are to consider the reproduction cost of these properties, and if we are to consider a capital account to which we intend to add the proportion of operating expenses which we conclude to be properly deducted and added to capital, then some such elimination should be made from the general administration accounts of the company in order that there may not be a duplication, that the salaries of these officers may not be considered as part of the operation expenses, and then again be considered as a part of the general overhead chargeable under the reproduction theory. The percentage represents Mr. Bailhache's own views, and based, he states, in part

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on his observation of the accounts of the Pacific Gas & Electric Co., and partly on what seemed reasonable in view of the amount of expenses on construction and on operation.

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Mr. Metcalf: From my point of view the policy is not a desirable one, or in accord with my own experience with these matters heretofore. I have never heard it urged that in considering the reproduction cost of the property such deductions as these should be made. It seems to me that whatever deductions are made are for considerations in connection with the original cost of the property, and not on the reproduction cost of the property. As to the propriety of doing this, it does not seem to me that from a public point of view it is desirable procedure to assume that in a large corporation of this sort nearly one-half of the administrative cost should go into construction. Take Mr. Eastman's time, for instance, the most essential question before him is the proper administration of the company. I admit that a certain amount of time is given to new construction work, but his primary duty is in connection with the operation of the company. Of course it is a question of policy as to whether any allowance should be made or not for construction. During this particular period this company was doing very little construction work, and it is not conceivable to me that it can continue in operation for a very long period of years without doing more construction. Now, to charge off any such ratio as 44% here from the administrative costs seems to me unreasonable and undesirable from the standpoint of the public.

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The corporation can borrow money most cheaply for its work under conditions of stability, so that the investor may know what the ordinary operating conditions may be; anything that you do to seriously disturb, or to make violent fluctuations in the operating expenses of that company, tends to bring an element of uncertainty which results ultimately in your having to pay a higher rate of interest. I think you will have such fluctuation in the operating expenses if you charge in no part of the executive force—the general operating force of your corporation; if you were doing a normal amount of construction from year to year, then you may charge a certain portion of the administrative charge into new construction without its having any effect in causing fluctuations in the operating expenses, but if you are sometimes doing a large amount, and sometimes, as here, almost no new construction, and you charge in any such portion as 40% of your administrative charges, you do cause very substantial fluctuations. Of course you can provide for it either through the rate, or through the operating expenses. It seems to me, though, to do those things which will tend toward uniformity and stability will be the best plan.

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Mr. Searls: This same underlying theory might have been met with just the same effect if we had allowed all these items in opera-

tion, and then made the contention that in valuing capital we should not allow in overhead for engineering, except possibly for some consulting engineering or administration on the theory that the company's officers were all there and available anyway, if we may assume we are dealing with a going concern, and we have assumed that. I imagine that might be where the difference lies. The company reproduces a plant as if there were no plant, and no market; they figure on a development expense to build the business up. In other words, they go the limit. We take conditions as they are, assume the company as a going concern, and in reproducing the plant when it is completed, the market is there, and the consumers are ready to be taken on. Now, if these matters are allowed in operation under those circumstances, it seems to me they should be deducted from overhead. If they are allowed in overhead, then they should be deducted from operation. It must be apparent that during all these years Captain Payson's salary, or whoever happened to be at the head of the company were carried as operation accounts and operation charges. That is the character of duplication to which I am referring.

Mr. Metcalf: We do not assume that you begin to pay the salaries when you begin to build your work. We have taken a construction period of 6 years; we have taken an operating period of building up the business 6 years, 3 years of which only overlap the other, and in those 3 years we have assumed only a portion of the operating expenses you would have at the end of the period corresponding to the entire property. That is to say, in the items that would come in, general salaries, administrative expenses, and engineering. In the first three years, we did have engineering and overhead, and administration overhead as a percentage of overhead applied, but not as an operating expense. There is no duplication, and there can be no duplication in that period. We have applied our percentage of engineering overhead uniformly for the entire construction. This is what I mean, that during the first three years there was nothing allowed for administration and engineering as an operating expense, so there can be no question about those three years. During the remaining three years of construction I have allowed some administrative and executive expenses through the operating expenses, and also I have allowed a percentage upon the construction cost of the work, it being my belief that the operating expenses which I have allowed have had to do solely with questions of operation, and not with questions of construction.

We started with the assumption that there was no plant. Mr. Schussler and Mr. Eastman, if you consider them as being paid their salaries during those three years, which salaries are accounted into the overhead at a certain percentage, they become virtually the

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builders of the plant during that time. They were not operators of an existing plant. There was no duplication there then.

9153 Mr. Searls: On examination we find that Mr. Muhlner's statement that there was a duplication of \$7,267.08, is correct. The mistake was due to the fact that Mr. Bailhache made this separation of engineers' salaries after he had finished his first audit of the accounts. This adjustment should be, and will be made in the final statement of our figures.

9154 Mr. Muhlner: In addition to that, may I call attention to other items included in the \$9,738.78 which I do not consider should be eliminated by the City. One is an item of general engineering department salaries for general work in the department, \$1,262.65; other Spring Valley reports, \$30.95; hydrography, \$542.20; relief map, \$4.80; atlas map, \$170.10; Crystal Springs Pump, \$18.20. The others in addition to that, making up the difference between the items I recited and \$9,738, have to do with the report to the Secretary of the Interior at that time, and they aggregate \$5,631.23. The \$5,631 is part of the sum of \$9,738, and is deducted twice. This \$5,631 is part of that \$7,267.

9155 Mr. Bailhache: In reckoning my percentage of 44%, I took the total amount of permanent improvements, which includes the new construction and real estate together, and also the total amount of operating expenses. That made one sum. Then I found out what percentage the permanent improvements bore to the whole. In taking my operating expenses I took the company's claimed operating expenses, excluding the taxes; simply the operating expenses. I found the average to be 44.7% as the result of that computation.

9156 Taking the year 1911, when the operating expenses were approximately \$600,000, I would not charge off the executive salaries, under my theory, 21 twenty-sevenths approximately to construction, because I think a general average over the whole period in that year. If I were to determine the matter for one year, that is the theory that I would apply, and I don't know that that would be a proper distribution for one individual year, because in some years it is very much lower than that. In other years it is the contrary. It might be fair in 1911, because they bought so much property in that year. I have not any opinion as to whether it would be fair or not, as I have not thought anything about it.

9157 I have not formed any opinion as to whether it cost the company any less for administration during 1910 than it did during 1908. I merely assume here that the operating expenses bear a certain proportion to gross permanent improvement over a period of years in order to get an average. I had no other way of getting at it, except to show the facts that the general salaries are all charged up against operating expenses, and to assume that a certain proportion of it should be charged up to permanent improvements.

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In order to find out what that proportion was, I took all the permanent improvements, and all the operating expenses, and arrived at it in that way. If you were to assume that the company purchased \$3,000,000 worth of land during that time, and had carried on its normal operations without any additions to the operating expenses, the mere fact that they acquired land in that year might possibly warrant me in computing the charges the way I did, and possibly they might have given all their time to the acquirement of those properties, and raising the money to buy them. I know that they don't spend all of their time in looking after the operation end of the Spring Valley; the business end of the Spring Valley is carried on by men who are operating for them. When it comes to a question of buying land, or of construction work, it is taken up with the president and vice-president, and the secretary, and so on.

I have no knowledge as to the proportion of their time that they so spend, but I observed the business that took place between the different officers as far as I could from the outside, and I assumed there was very little of the ordinary detail of the business transacted by them, except in the way of reports and things of that sort.

Mr. Bailhache: Referring to the gross operating expenses for the year 1909-10, \$735,000, and the gross permanent improvements in that year, \$197,000, and in the next year, 1910-11, gross operating expenses \$702,000, or \$33,000 less than they were the year before, while the gross permanent improvements are \$1,335,000, or something like six times as great; I don't think that would indicate that the gross permanent improvement expenditure had been made without increasing the operating expenses of the company to any material extent. I will admit that there is a great variation in the operation expenses of the Spring Valley Water Co. In some years there is \$100,000 less or more than in the preceding year, which indicates to me that the operating expense accounts are loaded at times with various charges, the charges I have deducted. For instance, in the year 1911-12 there is shown an operation expense of \$695,000; the next year shows \$804,000—\$110,000 more. You cannot show that your real operating expenses increased \$110,000 in one year. It appears that this increase in operation expenses has taken place in a year when the gross permanent improvement expenses were quite small.

There is no relation between the gross operating expenses and the gross permanent improvements whatever, except that the general salaries are charged into operating expenses, and operating expenses were taken as a basis to find out the proportion of the general salaries that should be charged into construction account. The permanent improvement was the other account taken as the other basis. The sum of those two accounts was taken, and the thing arrived at by percentage taken over the whole period. It would not be fair to take

9162 it for just one year. The average, taking it as a whole, is very nearly correct. It might be true that certain plans are worked out in one year, and not developed until the next. I don't know that there is any other method of arriving at it that would be fairer than the method I have taken.

9164 Mr. Olney: We find here, as between 1911-12 and 1912-13 an increase of \$110,000 in operating expenditures, and a falling off in gross permanent improvements of \$1,000,000.

Mr. Bailhache: Yes, and those very big differences in your permanent improvements are caused by large purchases of land. You purchased over \$2,000,000 worth of land in 1911. That is one thing that throws out what you call the relationship. I don't see any relationship between the gross operating expenses and the gross permanent improvement expenditures, except that they are two fixed figures, and in order to get a percentage I took it over a long period of years. I took it over this period because these are the years that were involved in the suit. You could not get a fair average if you took it in any one year. Taking it over the period of 8 years, we find a good fair average, because we have different amounts of permanent improvements, and we have changeable amounts of operating expenses. We get a fair average over the whole period, and we would not get a fair average if we took it for any one year.

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DIRECT EXAMINATION BY MR. GREENE.

Mr. Muhlner: The item furniture, represents the office furniture, both in the building at 375 Sutter St., and the furniture in use at the cottages. Mr. Bailhache has charged that to capital, and I have charged it to operation.

9166 Mr. Metcalf: So far as my experience goes with corporations of this sort, there are certain kinds of expenses, such as office equipment, typewriters, which wear out in the course of two or three years, and small office equipment, which is considered an operating expense. In the same category we find small tools which have a short life, and are then thrown out. It is more customary, I believe, to charge those as an operating expense, and renew them as the need arises as an operating expense, without charging them into capital account. In this particular case we have made no allowance, and so far as I know, none of the witnesses have made an allowance for taking care of depreciation of these small items. If we do not take care of them through the agency of the depreciation account, they must be taken care of as straight operating expenses, as a renewal. That has been the policy, as a matter of fact, of this particular company for years gone by. Under those circumstances you will have, from time to time, as the property has to be renewed, the same item, that is, a typewriter or a desk, appearing in the operating ex-

penses of the company. The same is true of the next item of office appliances.

Mr. Muhlner: In 1906, when the offices were rehabilitated, we bought certain equipment for the offices. That was charged to rehabilitation. It took the place of capital that was carried on the books prior to that time. It was not included in the operating expenses. Since that time we have, from time to time, bought other furniture, replacing that which was bought in 1906, and this represents those replacements since 1906. The Interstate Commerce Commission, in its provision for operating expenses, Article 458, where it speaks of stationery and printing, states that this account shall include the cost of stationery and printing used in the general offices, and not chargeable to other accounts, including the costs of printing annual reports, contracts, leases, stock certificates, and passes, and establishes in those these items: Adding machines, addressographs, and so on. There are about 75 or 100 other items coming under that classification.

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We make a plan of renewing our typewriters every three years. We are allowed something for the old typewriters returned. The new typewriter is charged to operating expenses. It is a practical way of handling it, and it is the most economical way, and in my opinion, the far better way. Most corporations handle it in that manner.

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Mr. Ellis: We just had the matter under discussion in connection with the gas case. It all depends on just how it is handled in your depreciation reserve account. What the Gas Company has now done is to charge all these to capital, and a depreciation reserve will be set up for all furniture and fixtures on a short-lived basis, making provision for their replacement. If such reserve is not set up, such matters should be charged off as operation. It as a question of interpretation and practice. You cannot have it both ways, but you must have it one way.

Mr. Muhlner: The next item, hydrographic work, represents the cost of that work performed by the employees of the company in the preparation of data for the records, such as completing the run-off on screens, the amount of rainfall, etc. The City Engineer requested Mr. Eastman to spend a very large amount of money on that work for the City's purposes as well as the company's purposes.

Mr. Bailhache: In excluding this item, my understanding is that it went into the book on water supply, the report to the Secretary of the Interior, and that it was used for that purpose.

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Mr. Muhlner: That was in 1911-12; this information was in the year prior to that time.

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Mr. Bailhache: They might have been gathering the data a year ahead, and used it in that book.

Mr. Muhlner: Look at page 57; "Espey expenses, hydrography

“and Espey salary and expenses”. Mr. Espey is a regular employee of the company, and this work was done under his supervision for the purpose of completing the records of the company. It may be that some of these records were used in the controversy at Washington, but primarily those reports were gotten together to complete the records of the company. I think all of us had something to do with that report.

9171 Mr. Metcalf: I call your Honor's attention again to the fact that in this item of various text books, text hydraulics, etc., on page 58, we did not include in our valuation of the property, in our inventory, any allowance for any of that equipment, of which of course, the company has a considerable amount.

Mr. Muhlner: The next item, survey, correcting boundary lines, etc., reports on titles, and the restoration of titles. After 1906 it became necessary for the company to institute McEnerney proceedings to restore title to its properties in San Francisco and San Mateo Counties. In addition to that, at various times, it is necessary for the company to send out engineers to prove up the boundary lines of its existing properties. These figures here represent those costs to the company. Some of those McEnerney suits are not settled yet.

9172 On page 76 is an item of \$3,000 for reconnaissance surveys on the Calaveras pipe line. That \$3,000 is not included in the sum accounted in the appraisal as spent on Calaveras to date.

9173 On page 76, Volume G, is an item for the Niles Canyon boundary line surveys, \$887.50. In addition to that there is an item of \$605.

9174 Mr. Bailhache put them both into capital account. Correcting boundary lines, or correcting titles to ones existing properties is properly operation costs, and should be included in the operation expenses. The item Calaveras Reconnaissance survey is not tied up as part of the Calaveras development cost. These capital accounts that I have of expenditures made in Calaveras Valley are in an account under the title of Calaveras construction, which we are carrying on the books as an asset account, and we include in that only the cost of constructing the dam. We don't include the conduit to the Peninsula until that is determined upon, and construction has been actually started on it. That is not being carried as a suspense account, it is carried as an operating account. Should construction work be done on that, operating expenses would be credited with the amount of those preliminary surveys, and capital account charged with those amounts. I keep a very detailed account of all the detailed operating expenses in each one of the accounts. There is a grave danger of carrying suspense account on the books. They become a general dumping ground for a miscellaneous lot of items. It has been the policy of the company to eliminate suspense accounts as much as it can. There is a particular instance of that in one of the operating accounts, the Crystal Springs pipe line, certain credits

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

were to come to operating expenses which were brought into the accounts of 1914—which Mr. Bailhache, I presume, accidentally ignored in his credits to operation expenses; we did actually credit operating expense accounts with items that were returned.

I had two particular accounts which Mr. Bailhache has overlooked. One was an item on the Crystal Springs transmission line, representing the salvage value of materials returned to stock on the change of location in the pipe lines in South San Francisco, the cost of which was charged in 1912, operating expenses, as \$2,089. Another item was the San Andres pipe line, salvage value of materials returned to stock on change in location of pipe line near Screen Tank on solid ground, the cost of which was charged in 1912 to operating expenses, as \$1,861.36, which we have credited to operating expenses in the fiscal years in which those charges were made. As I understand it, Mr. Bailhache did not do so. He deducted the total amount of the original item, not allowing for these credits.

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Mr. Searls: If you will put the amounts in the record as we go along, Mr. Muhlner, we will allow them.

Mr. Muhlner: Mr. Bailhache eliminates the next item, Picnics and Aqua Club Affair, on two occasions the company gave picnics to its employees. In addition to that the employees of the company had a club which they called the Aqua Club, and they had from time to time little affairs, such as walks over the company's properties, and dances; the company subscribed to a portion of the expense.

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Mr. Metcalf: It seems to me, as I view the administration problem, that within reasonable limits things of that sort are advantageous to the operation of the company; in other words, you do things to build up the interest of the employees in the work of the company, and providing the expenditures are not unreasonable in amount, it is a perfectly reasonable charge; in other words, the result of the charge is to make the operations of the company a little better, build up a better feeling, and as a result of that a somewhat cheaper cost of operation as a whole.

Mr. Muhlner: The item of \$2,000 in one year is for the picnic to the employees, not for the club.

Mr. Searls: I think we will concede those items.

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Mr. Muhlner: The next item, advertising pamphlets, etc.; from time to time the company has seen fit to advertise in the daily newspapers, stating its position on certain matters, and also advising consumers to be careful in the use of water.

The next item, the J. G. White & Co. appraisal; in 1911-12 the company saw the advisability of having a complete inventory of its properties, and employed an outside company of national reputation to make such an appraisal and inventory. This figure that Mr. Bailhache takes out, \$57,000, is the amount represented here by that cost. The public service corporations of the East, as well as the

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large railroads were doing this kind of work, and the company anticipated what very likely would happen in California, and which has subsequently happened, by getting a complete inventory of its properties. In that consideration it was a legitimate expense, and a proper charge to operating expenses. That inventory was not made with reference to the rate litigation and the condemnation suit. The appraisal and the inventory was practically all one. There is no segregation in vouchers between the two accounts, any segregation would be purely an arbitrary one.

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9181 Mr. Metcalf: Of course the cost of this was not included in our valuation of this property. Again, that comes under that same class of company records for which we have asked no allowance in the inventory. Within my own experience—and I have done more or less work of this sort—as for instance for the Indianapolis Water Co., no rate question was pending, no litigation was pending; the company felt that it was of advantage to it to have an inventory made with the prices attached; as a matter of fact, I know that in that case the direct result of that was a reduction in operating expenses. I have known of a number of other cases where similar analyses have been made. We have certain plants in which we do that year by year, solely for the management as a means and help in reducing the operating expenses.

9182 Mr. Ellis: The Commission has had the matter up for discussion, notably in the preliminaries in the telephone case, and Commissioner Thelen indicated that they would insist on having all expenses of such inventories amortized over a series of years rather than concentrating them in the two or three years in which they were incurred; in other words, the telephone inventory, as far as it relates to San Francisco, will probably aggregate somewhere in the neighborhood of \$65,000 to \$75,000, and they indicated that they did not want to have that charged in one or two years, but if it was a record of permanent value, it should be amortized over a period of possibly 8 or 10 years, or the utilization of the life of the inventory.

The Railroad Commission allows expenditures of that kind to be included in the item of expenditures incurred in hearings before the Commission, but taking the preparation of such an expensive inventory as the J. G. White & Co. inventory, in the telephone case, or in the gas case, where the aggregate expense is a very large amount in one or two years, they have indicated that it would hardly be fair to charge that to the one or two years in which the expense was incurred, but if it had any permanent value, it would probably extend over a range of 8 or 10 years as a basis for subsequent findings, and that it should be amortized over such a period.

Mr. Metcalf: So far as the question of distributing this as an operating expense over a period of years is concerned, I think that is advantageous, and it seems to me that the position of the Commission

is a sound one. The essential question, however, is whether it shall be accounted as an operating expense, or as a capital charge. It seems to me it should be accounted as an operating expense, not necessarily in one year, but amortized over several years. I understand Mr. Bailhache eliminated this.

Mr. Bailhache: I eliminated it under the advice of Mr. Moody, who was the engineer in charge of the case at the time. 9183

Mr. Muhlner: Legal expenses, Item 11; Mr. Bailhache has eliminated those items from the general legal expenses of the company; I don't know upon what ground or upon what theory.

Mr. Bailhache: I was advised to do so on the ground that they were a part of the water rate suit, and also in connection with Hetch-Hetchy.

Mr. Muhlner: I am quite sure they do not include that.

Mr. Bailhache: I did not subtract all the legal expenses of the company. I just subtracted the excess over the normal run, and in some years the entire amount where it indicated it might be a retainer in the water rate suits. 9184

Mr. Muhlner: Page 50 is the first item in the year 1908-09, Volume B; Mr. Bailhache deducted an item of \$10,000 fees to Page, McCutchen, Olney, and Knight. The \$10,000 was professional services rendered from April 1 to December 1, 1908, \$9,000, which is part of the \$10,000 item, and part of the services from November 1, 1908, to November 1, 1909, \$12,250. 9185

Mr. Greene: The \$5,000 on page 50 of Volume B, to Laidlaw & Co., was legal expenses paid to Senator Spooner in connection with advice on the validity of the decision of the lower court in the Madera Waterworks Case. Laidlaw & Co. are bankers, and the draft was drawn on them. The Madera case was a case brought by the City of Madera against the Madera Waterworks, and involved the question whether the City of Madera could install a competing plant as against the water company. The case went to the Supreme Court of the United States. 9186

Mr. Muhlner: The next item, water rate suit and condemnation suit, \$232,000, represents the cost to the company both for outside employment, and also the use of its regular office force, in amounts expended on the water rate suit litigation, and also in preparation of data for the condemnation suit. It includes legal expenses, in connection with the institution of the suits, and also the arguing of the 1903-04 suit, so part of the expense here is applicable to the rates for the years prior to 1907-08. These figures do not apply equally to the water rate suit and to the condemnation suit. We found it very difficult to make any distinct segregation of those two items. What was done for one was used in the other, and we figure a percentage basis. 40% of the total expense we allowed to one, and 60% to the other dur- 9187 9188

ing the year 1913, and part of 1914. My statement would not apply to any year prior to 1912-13, and those were all charged to the rate suit prior to that. The 60% was the condemnation suit, and 40% was the water rate suit.

9188-9191 (Discussion among Counsel and the Master on the question of the basis of the theory of the elimination or non-elimination of the expenditures of the company as regards to condemnation suit.)

9192 Mr. Muhlner: The bookkeeping department, 15% increase, is the expense which Mr. Bailhache has deducted from operating expenses, which he says is the cost of keeping the 15% excess records in the bookkeeping department. He keeps that on a basis of percentage. I happen to have the actual cost of that work, including the salaries and incidental expenses, such as binding the affidavit, and notary fees on the affidavit, the paper, etc., and my figure is considerably less than what his figure represents. My figure represents a total of \$25,640.49 as against his figure of \$33,936.95. There should be a charge for 1908, but I have not it. No record was kept for that year. I am beginning with 1909-10, \$2,163.70; 1910, \$4,237.95; 1911-12, \$4,365.60; 1912-13, \$4,640.45; 1913-14, \$4,839.33; 1914-15, \$5,393.46; total, \$25,640.49. To which should be added eight months of 1908-09, approximately about \$1,000 or less. It was \$2,000 for eight months.

Mr. Bailhache: I got at that by taking the actual amount paid for the years 1911, \$4,256.30; 1912, \$4,127.85; 1913, \$4,723.40; 1914, \$5,003.18. I took those four years off the Spring Valley records, and computed the rest on the basis of percentage. I have assumed the calendar years instead of fiscal years, and I got the percentage just the same. I took the percentage against the total of the pay roll.

9193 Mr. Muhlner: My figures cover the fiscal year. They not only include salaries, but also the incidental expenses, such as the binding of the volume, the notary fees, and a few other incidental expenses.

Mr. Searls: We will accept your figures on those, except that for 1908-09 some figures should be included here.

Mr. Muhlner: You might estimate that on the basis of 1909-10; you might take two-thirds of that, which I think would be fair, that would be about \$1,400.

Mr. Searls: We will call that \$1,400.

Mr. Muhlner: Those accounts are kept under an order of court.

9194 Mr. Searls: The theory of the elimination is that it is a rate suit expense.

Mr. Muhlner: No. 15 represents fences. In 1909-10 the company began to rehabilitate its fences around its properties, and replaced the fences that then existed with other fences. That is the reason for the heavy charge amounting to \$11,929.92. In the succeeding years we not only replaced old fences, but we also replaced some of these fences that had been installed in 1909 and 1910. All these figures include

both the replacement and the maintenance of those fences. Mr. Bailhache has deducted much of the maintenance of our fences. Our accounting does not provide that depreciation and reserve is carried on the fences.

Mr. Metcalf: We will concede that from the year 1908 depreciation does cover the fences, and that replacement should be paid for out of that fund, rather than operation, but that does not give a sufficiently long period to amortize the fences that were rebuilt; in other words, some portion of the fences would have to be accounted for as a renewal. This is an illustration of virtually a change in methods of bookkeeping; up to a certain time—1908—the replacement of fences has been taken care of as an ordinary operating expense, in the same way that a railroad company maintains its tracks; now, however, we are setting up a depreciation fund which shall take care of the fences. There is no question that from the time 1908, depreciation on the fences will be taken care of in that way under my own claim, but not under the company's method of accounting. The company has not had time within which to accumulate a depreciation fund which would actually take care of the replacement which had been made within this eight-year period. Under my view some portion of these items that Mr. Bailhache has taken exception to, should go out, but the major portion, I believe, should be left in. The maintenance should all be allowed.

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The cost of painting, and the cost of nailing up the boards, I should charge as a replacement account. When you come to the point of having to renew posts, and replace the fence, that should be charged to renewal account. In the case of a fence that was washed away to the extent of 150 feet, which had to be renewed, I should charge that to maintenance.

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Mr. Muhlner: We have those things happening right along, particularly in the city pipe system, where men go out and repair 5 or 10, or 25 feet of pipe, which we include in maintenance. We make this distinction, though, that in case they repair or replace 100 or 200 feet of pipe, possibly we charge that to depreciation. The Railroad Commission is very indefinite about this.

I will read this on page 38, under E-16: "Repairs to collecting "aqueducts, intakes, and supply mains", down about the center of the paragraph it says, "repairing pipes and removing, and replacing worn "sections and fittings." That is charged to operation and maintenance accounts.

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Mr. Bailhache: I did not eliminate any items here that to my mind were apparently maintenance charges. I would like to read some of the items on page 21, of Volume C, to show the general character of the items I eliminated. In July, 1909, 100 posts; fencing bolts for fence; barbed wire; fencing, 800 rods, peg staples; for posts

412 pieces; 414 pieces; lumber for 10 posts, storing; cost of erecting fence; extra labor on fence; paint 15 gallons for fence; barbed wire and rails; redwood posts. That is the general character of the items for fence. I considered it all new fencing that was being put around Lake Merced, and other properties where they had no fence originally, or fences were being repaired, or rather, rebuilt, and if so, it would be a replacement charge out of depreciation.

Mr. Muhlner: In 1909-10 we did the bulk of that work, replacing the fences that existed prior to that time; practically at no time in this account of fencing, making up a total of \$22,012, is any brand new fencing, where fencing did not exist before.

9198 Mr. Ellis: Personally, from certain observations on some properties I know, there has been large quantities of Elwood fencing put on, which have replaced old fences of a much inferior type to the extent that the new fencing was worth two or three times as much as the reproduction cost of the old one. To that extent it is purely a capital charge on any system of accounting.

9199 Mr. Metcalf: The fences have been accounted in the appraisalment of the capital, but as I stated, some of them have been renewed before you could have accumulated enough in the depreciation account to rebuild the fence. If a new fence was put up in 1909, it would be in the inventory, and would be valued there, as the inventory was made in 1913. I think the life of the fence was given as something like 15 years. We are concerned here with a period of eight years, and an accumulation of sinking fund of seven years.

9199½ Mr. Searls: We contend that all that constitutes replacement should be eliminated from operation. If you have not carried a sufficient depreciation account prior to 1907 to take care of that, it does not appear in this case so far; we cannot start in all over again in 1907 to replace your property.

ONE HUNDRED AND TWENTY-SIXTH HEARING.
MARCH 29, 1916.

Muhlner Witness: F. P. MUHLNER for Plaintiff.

9200 DIRECT EXAMINATION BY MR. GREENE.

Tools and appliances at pumps; that means the tools and appliances used at the pumping stations, and also the tools used in the operating departments, such as the shipping department, the city distribution department, and the water division.

9201 Mr. Bailhache: My deductions were made with a view excluding anything that was conforming to the section of the Railroad Com-

mission rules, on page 37, Section E-9, what I consider hand tools depends upon the size of the wrench, and the kind of wrench. If it is an ordinary wrench, I would not consider it an excluded article—a brush, or anything like that, I allowed to go into operating. If it got into larger tools, such as stilsons, wrenches and jacks, that would last several years, I took them out. I put no limit on them as to the cost. For instance, 954-82 in 1909-10 is one of the items such as I mean. The hand tools are one of the items of expense.

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Mr. Muhlner: The credit item of \$43.08, in the year 1913-14, might come about in certain credits being made, perhaps corrections in crediting accounts in one fiscal period that belonged in another fiscal period, items that may have been incorrectly charged to the City Pumping Station that should have gone to the Belmont Pumping Station. That credit item of \$43.08 was due to the fact that in the preceding fiscal period, 1912-13, a thermograph was bought for the Lake Merced system to determine, I believe, the variation in temperature on the Lake Merced Ranch. That was incorrectly charged to the city distribution department general expense in 1912-13. In 1913-14 I made a correcting entry, crediting that account, and charging the proper account with \$162.50, the cost of that thermograph. The \$43 odd, credit, represents the difference between all the debits that Mr. Bailhache has taken into account, and this credit of \$162.50. That still remains in the year 1912-13 as a charge, and was subsequently corrected on my journal, and Mr. Bailhache also took it into account in his correction for the succeeding year.

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Mr. Bailhache: I just took the tools that were bought as a charge, and I took out the tools that I thought should be added to capital account as a permanent tool, something that would last more than a year, irrespective of whether that tool was bought to replace a tool that was formerly there in the construction account or not.

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Mr. Muhlner: When we construct, for instance, a pumping station, we include in the construction cost of that pumping station not only the building and the pumps, but also the hand tools; in other words, equipping that station completely at the time when it was used as an operating unit. Any time that we replace any of the small tools at that pumping station, we charge that to maintenance. I am very sure that with hardly any exception at all these tools that Mr. Bailhache took exception to are tools that practically replaced other tools that had been formerly charged to the construction account. Small tools would not be charged against depreciation account. The Railroad Commission does not require that. If you were to take every 75 cent or 95 cent item and charge it to depreciation account as you replaced either a tool, or any other small piece of equipment, you would have an endless amount of accounting which would be an impracticable thing to do in a big corporation of this kind. When we built a pump-

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ing station, we had that station complete, with all the necessary tools to operate it. It is included in the cost of the pumping station, but it is not included in the depreciation items of that pumping station.

9206 Mr. Searls: I was looking at some of these items in Volume F., and I note on page 8, chain and tackle, \$11.55, and a garden hose—that was excluded entirely—on the Merced Ranch. It was excluded as part of your land development. Chains, \$97.25, installing the same \$12.38—that is on page 25. Here is an item, W. D. dam recorders, \$101.32, and on page 28 there are nozzles, \$9.60; steel tape \$4.55; a lawn mower \$9.25; all charged to capital. I do not say that they are in the list which Mr. Muhlner has made up, but that shows the character of the deductions made.

Mr. Metcalf: And similarly on page 8, of Volume E of Exhibit 125, for the year 1911-12, you find 4 oil tanks, galvanized iron, \$20; a bracket stand, \$8.95; thermometers, \$5.50; garden hose, \$11.

The Master: I think that is enough to show the general character.

DIRECT EXAMINATION BY MR. GREENE.

Mr. Muhlner: The rule of the Interstate Commerce Commission does allow a discretion in items under \$200. It provides that items that in the nature of which are structural items, over which there may be considerable dispute as to which they should ultimately be charged, that the accounting corporation shall have a discretion to charge those items either to new construction, or to operation and maintenance.

9207 The telephone system is in very nearly the same relationship as Item 15 as to fences. In 1909-10 when the heavy expenditures were made, we rehabilitated the entire telephone system of the Spring Valley Water Co., replacing some of the poles that had decayed and blown down, replacing a considerable portion of the wire, putting in and replacing central offices at Millbrae and at San Francisco, and
9208 replacing the cable underneath the bay at Dumbarton; relocating the telephone system and separating it from the high tension lines of the various power companies along the route, on account of the interrupted service that the high tension line was causing to our line. There was unquestionably some new construction in that, but just how much I don't know.

Mr. Metcalf: I have the same to say on that item as I said before in regard to the fence. In this particular item the provision for taking care of depreciation has always been made as a straight renewal, and not on the depreciation account. It so happened that the renewal came within this period. The account, also, in the later years covers items such as the equipping of the telephone system in the building in which we are; that has been changed twice since I have been there on our floor, and to charge that to capital account I think would be improper. It is essentially an operating account. It will be changed

back again, undoubtedly, when this work is finished. It was one of the incidents of the operation of the company. Moreover, if this item is deducted in the way that Mr. Bailhache suggests in the year 1909-10, and you make that deduction from the inventory of the property, which we have made as of the year 1913, in getting our rating base, you will then find yourself in the year 1908-09 without any inclusion in your rating base to cover telephone property which actually existed, and which was in use at that time. The same thing would be true of the year before, so that it does not seem to me equitable to make that deduction. There was no depreciation account up to the year 1908. In replacing this line, I believe there is some betterment in it, and to the extent that there is betterment in it, I admit it should go into new construction, but as I see it, you cannot deduct the full amount from the inventory properties, because that would leave us without any inclusion in the years prior to that deduction of value to cover the telephone system. The telephone system existed and was rendering service.

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Mr. Muhlner: A very large portion of that was not an entirely new line; there may have been a few hundred dollars of it new line. My recollection is, and I looked up the thing quite thoroughly at the time when I was making this investigation on these deductions, that I found that it was practically a replacement with undoubtedly the idea of bettering the line as we replaced it.

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Mr. Bailhache: There are 75 miles of new wire here that I noted at various points, and a great many poles. I understood that the line was extended beyond the point where it formerly existed to take in the new works of the company, and at Lake Merced there were separate lines built, so as not to interfere with telephoning over other lines.

Mr. Muhlner: As a matter of fact there was a line built from Lake Honda to Lake Merced. That was a new line. I am perfectly willing to concede that. That may have been \$200 or \$300.

The next item is changed location of pipe lines, etc. By that is meant changing the location of pipe lines by reason of changing grades in city streets, and to place the pipe lines on more advantageous ground, and to change the connections to the pipe lines at the pumping station, and by that I have particular reference to one complete change that was made at Clarendon Heights Pump and another change at Belmont Pump. These are charged by Mr. Bailhache to capital account.

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Referring to page 25, Book B, year 1908-09, \$2,250, the Southern Pacific Co. was doing a considerable amount of work near Centerville in the changing of their track; they were building the Dumbarton cut-off. They asked the company if they would change the location of their pipe line along that crossing, stating that they would pay

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such expenses as the company incurred on that work. The company did make the change, and the Southern Pacific Co. paid for the cost of that work. The Spring Valley Water Co. saw the advantage of changing an additional 220 feet of pipe on, I believe, better ground; this represents the cost of changing that 220 feet of pipe.

9213 Mr. Metcalf: To the extent that the new line is a distinct betterment over the old, and involves greater cost, I would account the betterment as a capital expense; in other words, if it were to be assumed that the original construction in the original location would have cost \$2,500, and in the new location, which was finally built upon, it would have cost \$3,000, at the time of making the change, I would charge off as a replacement, or as a depreciation, if I had a contingent depreciation fund, otherwise, as an operating expense—a major repair—\$2,500, and add to the construction account \$500, so that there would stand on the books as against the line in the new location the \$3,000, and there would have been charged off to operating expenses the \$2,500 amount.

In the case of the old Pilareitos line, we treated that as abandoned property, taking it out of the capital account, and putting the new line into the capital account. This differs in principal from that in this way: If you now add this \$2,200 to capital account, as Mr. Bailhache suggests, then you have in the original cost of the property, as shown by your books, the cost of putting into the first position, which may have been, let us say, \$1,500 or \$2,000, I don't know what it was, and you have now added another item for that same length in the pipe line of \$2,200; in other words, you have a direct duplication which was charged into the capital account.

9214 In the case of a line like the Pilareitos line, unless you amortize it over a given time, you are throwing too much of a burden on the rate payers in a given year, and that is one of the reasons why we want to carry a depreciation allowance in a contingent fund to take care of emergencies. If you don't have your contingent fund, you can put it into capital account, but the more common practice today, and I think the better practice, is to carry it as a suspense account, amortizing it, say, in a period of ten years. I know of a number of entries of that sort with the Wisconsin Commission, and I think there have been a number with the Commission here where they said they would give the corporation five or ten years to amortize a heavy expenditure.

Mr. Ellis: I don't recall any specific case, but I think the principle holds that is somewhat analogous to the suggestion of writing off the expense of the J. G. White & Co.'s inventory.

Mr. Metcalf: In this particular case I think it would have been proper to credit capital with the amount of the cost of the old pipe, and charge this entire amount against capital here, and then charge

the old pipe to depreciation, if you had a depreciation account. Otherwise, you would have to charge the difference to renewals, which would mean the operating expenses of the year, or over a period of years, if the amount were excessively large.

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Mr. Muhlner: Since we have been carrying a depreciation account, where we have actually replaced large sections of pipe, or flume, with other kinds of structural work, we have charged to our depreciation account practically the entire value, less the salvage value of the old structure, and charged to new construction the new work of replacing that structure. I remember the instance on Harrison Street where we put in the ground a 30-inch main to take the place of one that was formerly there, at an expense of about \$30,000; the old line was worth to the company on the company's books about \$28,000, and the old was charged to depreciation, while the new line was charged to construction. The same thing is true of the Lake Honda transmission line where we replace part of the flume with a 30-inch pipe. The system prior to the establishment of a depreciation reserve was to charge all renewals to operating expenses and maintenance. The effect of that was that we practically carried depreciation on the replacement theory. This particular item is the amount of the cost of that pipe. That cost represented the cost of putting into the new location 220 feet of pipe.

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Mr. Metcalf: This is the conservative thing to do in the case of small pieces of work, because in these cases the cost very often is excessive; much more than it would be if the work were done at the same time of the building of the entire line, because there is the expense of getting your men to the work, and of cutting into the old line, and making the connections and so on. That is particularly true of cutting in gates. To set your gate might cost you \$5 or \$10 at the time of building the line, but to cut in the gate, and do everything that is necessary afterwards might cost you \$50 later on; under those circumstances you would not want to charge the difference between \$5 or \$10 and \$50 to betterment, because it is not a betterment. It is the excessive cost growing out of the conditions under which the work was being done.

DIRECT EXAMINATION BY MR. GREENE.

Mr. Muhlner: The first item, application 85, is changing the discharge connections at the Clarendon Heights Pumping Station, \$1,179. That is in Volume C of Exhibit 125, page 11. It was doing two things. It increases the efficiency of the plant by reducing the cost of the operation of the plant. If you had a pipe line, and it is in a location close to a road, or on a road, in order to properly protect that pipe line you build either a concrete or an iron shield over it; that may cost you from \$500 to \$1,000, yet you would not charge that to construc-

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tion any more than you would charge the relocation of that pipe line, or the lowering of that pipe line, to construction, because it takes the place of a different character of work.

9218 Mr. Metcalf: This is another case where undoubtedly there is some betterment. You have replaced a structure which was not only capable of doing the service, but actually was doing the service which it is doing today; it is doing it today at a smaller operating expense. The structure itself is probably somewhat better. The cost of putting the new structure in the place was very substantially greater than it would have been if it had been done at the time the station was built, because the cutting and fitting work of this sort, and maintaining your service uninterrupted, is very expensive work, and therefore it is not fair to say that the difference between the cost then and the original cost is the betterment; some portion of it may be. It seems to me this is exactly like the other items cited, and the company has done the conservative thing, the thing which is in line with good practice.

Mr. Muhlner: The next item is changing the location of the Lake Honda sewer to protect the Lake Honda Reservoir, \$1,378.12. That is on page 19, Volume C. The sewer was dangerously, as I understand it, near the lake, and this represents the cost of changing the location of that sewer to a more advantageous position.

I have a repair to the sewer at Lake Merced, \$239.96; I have a credit directly on that account of \$23.97.

9220 The first item, 1910-11, is near the top of the page, \$281.35, and it is a continuation of the items of the preceding year.

The next item is "changed and rearranged discharge pipes", the total cost of which was \$1,266.12. The salvage on that was \$1,225.31, and the net cost was \$40.81. Mr. Bailhache has taken exception to \$117.50. My figure of \$40.81 represents the actual net cost as appearing on the books as against the pumping station.

I might add here that where there is a salvage, we credit the cost of doing that work with that salvage value, so that the amount in operating expenses or in maintenance is the net amount, and not the gross amount of the cost of the transfer or change. Mr. Bailhache has taken exception to \$117.50, so I presume he did not take into account some of the smaller credits. That would have reduced his \$117.50 to our figure of \$40.81.

9221 The next item, raise stand-pipe, Belmont pumps, to ascertain carrying capacity of 36-inch pipe from Belmont pump to Burlingame, application 179. Total cost, \$427.94.

Mr. Metcalf: Application 179 shows an entry: "May 5, 1911, 'Belmont pump: raise stand-pipe and tower to a certain carrying capacity of 15-inch pipe from Belmont pumps to Burlingame, in 'view of improvements contemplated to obtain six million gallons 'more per day from the Alameda system.'" I think that is a better-

ment, derived, however, at an excessive cost as compared with the original cost of doing the work, as I understand this note, and I think that is true. That is in connection with the Ravenswood Booster Station, and was done so that they could obtain a higher head.

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Mr. Bailhache: That application there of \$427.94 is an estimate, and I suppose the succeeding charges will be found elsewhere along through the work.

Mr. Muhlner: They originally did the work to ascertain what the carrying capacity would be. They found the line would carry the water, and subsequently they built the Ravenswood Pumping Station, and they are carrying more water. We are looking upon these accounts from an angle of 5 or 6 years after the work has been done, and after the charges have been made; we didn't know at the time when these charges were made just what the development would be. If we were to include this, as well as dozens of other items that have come up in suspense accounts to be carried until certain work has been done, we never would get through accounting. We handle too many items during a month to warrant that kind of work.

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No. 19, the care of gardens, etc.: These figures represent Mr. Bailhache's deductions for plant gardens around pumping stations and cottages, protecting trees that had already been planted, replacing the trees at Crystal Springs and San Andres that have been originally planted, and charges to forestration work, and the maintenance of grounds around the pumping stations, the maintenance of plants and trees in conjunction with that kind of work. There is no original forestration here. In the 1912 account we took out something like \$3,000 or \$4,000, which Mr. Bailhache has noted in his accounts, and charged that to capital. That represented the portion of this work that was chargeable to capital.

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When I say "forestration", I mean planting large areas for the purpose of keeping the water intact, and to eliminate evaporation, and to protect the watersheds. I do not mean to say that there is not included in here costs of planting around the stations, or beautifying some of the walks of the company at Sunol, or some planting along the county road on its Pleasanton and Sunol properties; I mean for general forestration work, and I am very, very sure there are none of those items in here.

When the forest was originally laid out, it was charged to capital. Some of the trees died in the course of the year; we replaced those trees that had been originally placed in the ground, and originally charged to capital, and this is much of the expense.

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Mr. Bailhache: I didn't make any deductions from the ordinary expense of maintaining the ordinary garden work about the company's properties. There were trees and planting done around the Sunol Temple, and around Pleasanton, and also on the reservoir

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9227 sites, that I call forestration, and I took it out as a capital charge. I was, to a certain degree, governed by the amount involved, but not particularly. Where there were a few trees planted, I paid no attention to it. I took mostly the larger amounts for forestration put on the watershed, adding to the value of the property of the company. If the company is adding to the value of its property by planting, they should put it in their capital account, and not in their operating account.

Mr. Muhlner: In charging new planting, where it was an important piece of work, to capital, in our Sunol improvements account for 1912 we charged not only planting the ivy along the avenue, but planting other trees and shrubs along that avenue, \$438.95; in the following year we have a similar charge of \$621.79. Another instance in the 1912 account is Crystal Springs Reservoir improvements, forestration \$2,792.

9228 Item 20, experimental work, consists principally, in the year 1913-14, of a screen house which Mr. Elliott built at Lake Honda to try out a new theory in screening. It didn't work, and he did not use the results at all for any betterment or any improvement. It was simply an experiment.

Mr. Metcalf: I think that is a proper charge, on the theory that it is reasonable for Mr. Elliott to make such investigation from time to time with a view to increasing the efficiency, or decreasing the operating expenses, and that when failures come, it is wiser to charge them off immediately than to charge them into capital account.

9229 Mr. Muhlner: Referring to page A, 1911-12, under the Crystal Springs Reservoir item, forestration work and planting (\$2,509.56), \$2,603.47; the parenthesis means that forestration work at that time cost the company actually \$2,509.56, and Mr. Bailhache took out \$2,603.47, very likely not taking into account some credits that were in the accounts. On the next page is forestration and planting, \$1,291.32, and an item of \$12.25 with a circle around it; that means that Mr. Bailhache has placed a credit in his accounts of \$12.25 because the credit appears on the company's books for that account. I don't remember particularly about that \$12.25, as to whether it was credited to operation and charged to capital, but down below there is an item of \$3,567.99; that \$12.25 may have been a tool, or something that was afterwards returned to the stock. That means that some of these large items, which I call forestration and planting, were first charged to operation by me, and then later credited to operation, and charged to capital.

9230 Mr. Metcalf: In Plaintiff's Exhibit 97, introduced by Mr. Hazen, table 27, page 69 thereof, under the heading of "Inventories", I find the Sunol nurseries item \$5,130, and the Merced nurseries \$7,815, and a third item, miscellaneous planting, \$10,400. Those are the

only items that I recollect in the inventory to cover forest planting, except the items to which you have referred under City Reservoirs, in table 24, for instance, where there are some small items of cultivation, as in the Presidio Heights \$90, and in the Clay Street \$200.

Mr. Muhlner: The Lake Merced nursery and Sunol nursery, are the nurseries for the propagation and growing of the trees, and they are carried in capital account in the inventory; when the trees are taken from those nurseries and put out on the watersheds, or in the gardens of the company's properties, then they are charged to those specific accounts. All the work in the care of the nursery, the buying of new plants, seeds, and such other things as are necessary for the development of plant life are charged against those nursery accounts, and they are carried in the inventory. The original planting of any tract that was planted to trees I have charged to the capital account, and while some of these items were originally charged to operating expense, correcting entries were made, by which, in the case of the original forestration, they were charged to capital account. The cases in which I have charged items to operating expense, under the head of fixtures and planting, have been those cases where it was the replacement of trees, and in keeping up the forestration that had already been made, and in regard to some of the gardens around the pumping stations, I simply charged those right into operating expense as the work was done.

Auto equipment, repairs and maintenance: These figures of Mr. Bailhache's represent the purchase of automobiles used in the operating departments of the company, and some repairs and some replacements to those machines. The difference between my figures and Mr. Bailhache's figures will represent operation and maintenance on those machines. The purpose of charging these machines to the operating account was that they were bought primarily for the use of operating officers of the company. The company had no depreciation account to provide for the depreciation of these machines. The machines ordinarily have a very short life, and three of the machines that are included in this list have since gone out of use and been sold. We decided that it was a better, and an easier way to handle the value of these machines by charging them out at the time they were purchased, rather than spreading them over a period of three or four years; for that reason we had these charges for the fiscal years 1907-08 to 1914-15.

The Railroad Commission provides that in auto or teaming equipment, or any equipment that is used on specific work in the company's business, shall be carried to a distributing account, and each month the use of that equipment shall be distributed over the accounts that the equipment has been used upon. We do that at present with the machines that we have bought to replace the wagons in the service and meter department, and in the water division.

These newer machines are used on repair work, new construction work, and such other work as is necessary. We charge at a certain rate per hour in one department, and at a certain rate per mile in the other department, which rate is supposed to take care of the operating expenses of the machine, the replacement of parts on that machine, and also the depreciation of the machine itself, and in-as-much as in these other years the machines that Mr. Bailhache has taken exception to were bought for the operating officers of the company, there was no gain in allotting the expense of the purchase of those machines either into the departments themselves, or over a period of years.

I think automobiles are shown in capital appraisal. I know that some of the machines that Mr. Bailhache has included here are no longer in use by the company. They are either sold, or are in scrap. The machines in use, I think, are inventoried in the stock on hand, \$289,000.

9234-9235 (Counsel for Plaintiff and Defendants agree that the machines that were acquired, and that are under consideration here as deductions, should be taken and written off over the entire period of the case as an operation charge, and then if any of these machines which Mr. Bailhache has deducted are also carried in the inventory, they should be taken out of the inventory.)

Mr. Muhlner: Our inventory includes simply the resultant value, or depreciated value of the machines that are used in the operating department by the men on specific work. The rate we charge out for those machines for each hour's use, or for each mile-age use, is supposed to take care of the operating expenses, maintenance and depreciation. They are all Ford machines, and the life would be very short. The Locomobiles are not carried in the inventory.

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9236-9237 (Counsel for Defendants suggested that the sums which Mr. Bailhache took out, amounting to \$19,576.39, should be put back into operating account, and distributed in equal amounts during each of the years of the 8-year period.)

Mr. Muhlner: Item 22, non-operating accounts: This represented the amount deducted from the operating expenses by Mr. Bailhache on the operating costs of Lobos Creek, Niles Aqueduct, Niles Screen Tank, Portola, Pescadero, land expenses on non-operative property, and Calaveras. Those are not all non-operating accounts. The City does not claim the Niles Aqueduct to be out of use, nor the Niles Screen property, they simply eliminated them, and they both should be included, as should also the Pescadero expense. Pescadero was really a continuation of the hydrographic work, although the work was done directly at Pescadero, the account was kept separate for that purpose, to show just what that hydrographic work was costing. It is really part of the engineering expense of the company. Mr. Bailhache took exception to it, and eliminated it, very

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likely thinking it was maintenance of Pescadero property, but it was not. My recollection is that that hydrographic work was on all screens, irrespective of whether they were in use or out of use on the West Coast.

Mr. Metcalf: I suppose it is a question of principle whether engineering or hydrography on the West Coast is to be considered in this case. It was our view that the company had these various properties. It has acquired certain water rights on the Pescadero. In order to determine whether that was worth developing as a source of supply, the company has felt it desirable to make hydrographic study, in other words, gage the flow of the stream from time to time. Now, if the Pescadero is ultimately developed, those expenses might then at a later period be transferred to construction account. A more normal treatment, I think, would be simply to include it under the operating account, when incurred as part of the studies which the company will make in regard to the yield of its sources of supply. Of course, it is true the property is not in use, and it may never be in use. We look upon it though as one of the obligations which the company has to meet to look forward to the future supply of the city. It seems more conservative to carry those expenses into operating account than into capital account. It is part of the business, of course, although it relates to the future supply, and not to the supply of this particular period. These items referring to Pescadero have no particular reference to any improvements on the land. It is simply an examination into the possibility of a water supply from that source.

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Mr. Bailhache has included the revenue, but he did not include the operating expense.

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Mr. Searls: That is not the fact either, because we have not presented our case on the exclusion of properties used and useful yet, and when we do, the revenue will be excluded. We could not exclude the revenue, because we did not know at the time this was made up what property would be excluded.

Mr. Olney: We make no points that Lobos Creek is in use. If the accounts are to be made up on the basis of excluding from both sides of the account, the revenue and the expenses, then this item of Lobos Creek should go out. I understand, in effect, there is no revenue from Lobos Creek, and with respect to that particular item it would be unfair to the City, but whether that would apply to the whole thing or not, I don't know.

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Mr. Searls: I concede that the next item, Niles Aqueduct, should be allowed. That is, assuming that the only purpose of these exclusions is that the property was non-operating.

Mr. Bailhache: I took it out under advice. I was informed it would be considered non-useful at the time I made these original studies.

Mr. Greene: The next item, Portola, is the same as Lobos Creek.

9243 Mr. Muhlner: Land expense is in the same category as Portola and Lobos Creek; it represents the expenses of upkeep of detached properties. There is no question about hydrography expense in this land expense. I think those properties are segregated along the same lines as Mr. Hazen's segregation.

The year 1914-15 you will find on page D of that year. It is eliminated in a lump sum of \$4,461.11.

Mr. Bailhache: The heading of non-operative property, page 78, Volume G, Exhibit 125, is the Spring Valley account as shown by their ledger. I have no idea what this non-operative property they have here is, because there is no detail to it.

9244 Mr. Muhlner: There is no Pleasanton expense in that non-operative account. This is limited to the detached properties, Lobos Creek, Portola, South of the Bay properties, Stevens Creek, Camp Howard, Poor Man's Tract, the Baird property, the portion of it that is not in use; Coyote, the San Benito County property, which property has since been sold, and a piece of the Polhemus property; I think that is all. The tracts around San Mateo County, like the Screen House Tract, and the Silva tract, are in the operative properties.

9245 (The legal bills were referred to.)

9247 Mr. Greene: * * * * * The notion that I had was that it would be obviously illogical to include the total expenses of this litigation in any one year; that if they are to be included, they ought to be sprinkled over the years in controversy, if the suggestion is proper that they should, in fact, be included at all. If these suits were found to be started just simply for the purpose of harrassing, and not in good faith, there is no question at all as to the treatment that should be given expenses of this kind.

9248 Mr. Muhlner: To a very large extent, they are accounted in the year in which they are paid. We try, as far as possible, to equalize what we assume the bills for legal expenses to be. For the straight legal expense, we try to pro-rate those at the time when the expenditure is incurred, but so far as the expenses of consultation fees, and others outside of the attorneys, and also of the salaries of employees on statistical work, those have to be charged in the year in which the actual expenditure is made. If we knew that we would incur substantial legal expenses from year to year, we would make some allowance for it from year to year as far as the legal expenses themselves are concerned, and by legal expenses, I mean the fees of counsel, but the other expenses, the compilation of records for the information of the court, or information that is used, are charged at the time when the expense is incurred, and that would also be true of the fees of experts employed in the case.

Mr. Metcalf: I know that was the case at Denver, that the company charged up legal fees, although the bill had not been actually rendered, and I believe it was not rendered until the litigation was through, but in order that it might not have to bear the entire expense of that bill at the termination of the litigation, they charged something in as the service was rendered from year to year; a pure estimate. 9249

Mr. Muhlner: May I have permission to correct an error made in my exhibit on page 9, item 11; in the year 1913-14 column, together with the \$12.75, I want to insert the figure \$7,408.70, making the total of that line in the last column \$94,906.61; also to make a corresponding change on page 10, line 25-7, 1913-14, reducing that to \$10,455.25, and reducing the total column to \$99,443.44; it does not change the total at the bottom of the page; it is merely a question of distribution. On page 12, about the middle of the page, where it says "Reports Spring Valley properties, 1913-14", the \$7,408.70 comes out, and the total is reduced by that amount to \$24,295.51. The total at the bottom of the last line, the last column, is \$99,443.44. The column 1913-14 is reduced to \$10,455.25. Whatever elimination should be made from operating expenses on account of legal expenses will appear from that table, and this information may be discarded for that purpose. When I went through this sheet, No. 2, I mentioned that the reports to the company on Spring Valley properties amounted to \$31,704.21; that figure, of course, should have been, had those figures been correct, \$24,295.51. 9250

Mr. Greene: On page 12, under the heading "Work for City on file", the figures opposite that heading are given as \$6,874.44. It is agreed between Mr. Searls and myself that that figure shall be taken as \$4,687.22, and that that may be eliminated from the company's account of operating expenses for the year 1914-15.

The Master: That will be the disposition of that item upon the stipulation of the parties.

Mr. Greene: The fact that the City would not ask for any further elimination under that head is covered; the balance remains as an operating expense. 9251

Mr. Searls: That is conceded.

Mr. Muhlner: Item 23, supplies, operating; miscellaneous supplies: One case that I particularly remember was a case of fuel oil and lubricating oil which had been taken out of the operating expenses, and some of which had been eliminated, and the balance charged to new construction. This consists of a lot of miscellaneous items. In 1911-12, page A, garden hose \$11; garden hose and couplings \$23.14. Page D in the same fiscal year, hose for use in the shipping department \$294.50. That was about a 2-inch hose to supply water for shipping, and I think we have to replace that once year.

9252 The next item is \$753.60 for Kelly clamps and keys. The Kelly clamps are used in the collection department on shut-offs where it has become necessary to shut services off for non-payment of water bills. It is necessary to assure the company that those services will not be turned on, so they put a lock over the stopcock. It is virtually a seal, and they have to break it in order to get water again.

Mr. Bailhache: I took that as a permanent tool, or fixture, a part of the business.

Mr. Muhlner: Those Kelly clamps cost, I think, 50 cents apiece, and I would say between 50% and 60% are broken.

9253 Referring to page C of the 1909-10 account, \$685.75 for repairs to meters: We don't carry a depreciation fund on repairs to meters. These are used solely on repairs to meters. They consist of gear trains, of gears, of glasses, many dozens of items that help to make up a meter. The item is a repair item, and should remain in operating expenses.

9254 Mr. Metcalf: It is very difficult to say when the meter wears out completely. In the East the most common cause for the throwing away of the meter comes from the breaking of the casing by frost action. Here you don't have that. It might be due to a change in form of meter. It might be due to the fact that grit has gotten into the water at some point, and has so far injured the meter that it is cheaper to replace it as a whole than to repair the parts. I am of the opinion that we are coming to a point in accounting meter charges in waterworks practice where we shall make no allowance for the depreciation of meters, and will regard it is a purely maintenance problem. The casing may last for a great many years. The train of gears are not long-lived, the disks wear out and crack at times, particularly if there is a water hammer on the line, as there is on some of the dead ends. Those have to be replaced from time to time, and it is common practice to charge those replacements directly to repair account. It is only when the meter as a whole is taken out, and either thrown away, and a new meter installed in place of it, or completely overhauled, that we could charge it to depreciation account. In my depreciation I have usually allowed 25 years, I think.

9255 Mr. Searls: I think probably this is a proper operating expense. The only thing that occurred to me is that it would probably warrant a lower depreciation allowance.

9256 Mr. Muhlner: An item in 1907-08, fuel oil at Ocean View Pumping Station, \$667.03. That is on page A of 1907-08, and on page 12 of Mr. Bailhache's exhibit. Mr. Bailhache, I think, charged it to construction. That oil was not used in a test of the Ocean View Pumping Station.

9257 Mr. Searls: The Ocean View Pumping Station where this fuel oil was used had been in use 2 or 3 years, so that I know it could not

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be a test of the operation of the new pumping station at the time when this charge was made. That item, \$667.03, is made up of fuel oil, \$547.07; lubricating oil \$30.93; insurance \$29.15; packing and other miscellaneous supplies \$59.91.

Donations: Donations to charitable institutions, hospitals, churches, and general charitable organizations. The Panama-Pacific Exposition we have as a separate charge. These donations are to people outside of the Spring Valley Water Co.'s employ.

Item 14 represents repairs, maintenance, small replacements, and alterations, generally speaking, throughout the whole works.

14-A represents the maintenance, alterations and repairs, and small maintenance at the pumping stations.

14-C represents the maintenance and alteration of the buildings on the works, and particularly the building at 375 Sutter St., our office building.

14-D represents rehabilitation, maintenance and general repairs to roads and trails. I have grouped the items which appear under the first heading. The first item is electric lamps \$11.95. That means the bulbs. The next is replacing pump parts, a total of \$80.85.

Taking the year 1907-08, line 14; the first item under that is \$40.50. It is a 3 by 2 Snow brass pump.

The next item, hardware and miscellaneous; some of these items that make \$6.81, and \$157.58, were very small, and I really didn't have time to look up the minute details of them.

Taking 1909-10; I have an item here, "Replacing condenser tubes, \$61.54"; a similar item \$9.70; an item of the same kind, "Replacing condenser tubes, \$95.20"; then "Replacing sewer pipe, \$69.90"; "1/2 inch oil governor, \$16.25"; "iron railings around wells for protection, \$37."

Teaming at Lake Honda, \$248.62. That was general cleaning up and leveling off of one of the lots in the Lake Honda tract.

Referring to pipe, incorrectly charged to new construction; during that time we were constructing the new San Andres pipe line, and some repair work was done on the old San Andres pipe line. Originally in the books it shows that this item of \$864.15 was charged to the San Andres pipe line, new construction. That was later found to be an incorrect item, and was taken out and transferred to the operating expense of the old San Andres pipe line. It was purely a maintenance charge of certain repairs that were done on that line.

The cut in the automatic valve item is work that goes on from time to time; the items are small, and we charge such work as that to maintenance.

Labor and materials, and grading trestles; we have to use means of protecting the trestles, flumes, and other wooden structures,

from fire. It is very often necessary to send men out to clean up and fire-guard around those wooden structures.

9263 The next item, \$1,810, for a bulkhead at the Hadsell Ditch was for the building of a temporary bulkhead there to keep the water from washing over the property adjacent to that ditch. It was not a permanent structure, either of wood or concrete, and we therefore charged it to maintenance. It was built by the Western Pacific Co. for us, and we paid them. It might be construed as part of the permanent improvements on our Hadsell tract, if it were not temporary. I don't know whether it is there now or not.

The item further down; "replacing condenser tubes, \$475," is similar to the other item above which I read. One reason that is not a proper charge against depreciation, is that the Railroad Commission provides that those things are to be charged to operation and maintenance.

9264 Mr. Metcalf: Ordinarily I think the waterworks would not charge the replacing of a few tubes in a condenser to depreciation; if the condenser reaches a point where it must be thoroughly overhauled, and all of the tubes replaced, that would be charged to depreciation. It is just as in the case of ordinary boilers. The lower row of tubes in the boiler is apt to go before the others; in replacing those the cost was accounted to repairs.

Mr. Muhlner: The tubes themselves cost \$148.85; the balance of that represents the cost of replacement. That is the Precita Valley pumps, and that station still operates when we need it.

9265 The expenditure of \$1,261, repairing pipe housing, would not replace very much, or any considerable length of distance.

Mr. Ellis: It depends on the size of the housing. Housing is cheap, and is a cheap class of construction. I don't know what pipe this is over, or the type of the housing. If it is made of redwood, I should imagine the lumber in place is probably worth \$45.

9266 Mr. Metcalf: One year ago I analyzed for a 10-year period the repair account, as reported by the company, with a view to seeing about what it amounted to on a percentage basis, and with reference to the service which was done. I went through the various elements of the operating cost in that way, and I found the repair account, judged by such a standard as that, a reasonable one. Since that I have gone through with Mr. Muhlner, in a general way, these items, and certain of them in a detail way, which have been segregated by Mr. Bailhache. It does not seem to me that it is quite the situation to say that if it is a corporation that wants to charge everything possible to maintenance, and get as large a depreciation reserve on top of that as it can, the more they charge to maintenance the better it is to them; it is more a question of what is in line with current practice. It is my personal feeling that if error is made, it is wiser to make the error in the direction of charging more in the operation

expense, and less in the capital account, simply because anything you put into capital account you must permit the corporation to earn a rate of return upon until it is amortized.

Under those circumstances, the more quickly you can amortize it, it seems to me, the more advantageous it is to the public provided your charges which thus result are fairly uniform, and do not result in violent fluctuations from year to year. If I might cite an example, for instance, which occurred in Boston some years ago, it was found that the school houses were being built upon bond issues, and that the public was paying very large interest allowances year by year on the school houses which were being built. It was then discovered that they were building virtually one or two school houses a year, and that it would have been very much better to have built those school houses out of the income of the city year by year, instead of on a bond issue, and then pay interest upon the bonds for a long period of years. The same thing is true of pavement in our large cities; our cities are coming to pay for more of that work out of current income as being a safer policy for the public rather than put too much of it into a construction account and carry it for a long period of years. Those items are strictly betterments, and there is greater reason for carrying them in the construction account. In the case of items of this sort, which are repairs and maintenance, it seems to me it is wiser to be conservative, and not inflate the construction account, and the rate payer, in the end, actually pays less than where you put it in capital account, and he is forced to pay a fair return on that amount.

9267

As I see it, at most it would mean in that practice of charging everything possible to maintenance, that you would gradually accumulate a surplus for depreciation in excess of the needs of the situation. That is a matter which would appear in the accounts of the company, and which would be perfectly clear to the regulating body, so that if it is found that the depreciation account was accumulating too rapidly, it would probably say, for instance, at the end of a 5 or a 10-year period, for the next 5 or 10 year period we will allow you a smaller rate for depreciation. From the point of view of the rate payer it simply means he has paid somewhat more into the depreciation fund; he has had greater security, or the corporation has had greater security, which results in stability, and in the corporation being able to borrow money at a somewhat lower rate. To that extent it is advantageous to him. I admit that he may have extreme conditions, which are not desirable, but I have not happened to meet them in this field.

9268

The small replacement account, such as taking 100 feet of pipe, or 200, or 250 feet out, or putting in a big valve in the street, or taking up a couple of hundred feet of street, is charged to depreciation, and it has been done for 5 or 6 years.

9269

Mr. Bailhache: I was only going by the replacement account, which does not show any of those small charges; it shows charges against it for realized depreciation, for instance, where the Lobos Creek line went out, and where certain large structures were eliminated. I failed, though, to find any small charges in it, except occasionally some small structure, or some item of that sort. What I am talking about particularly is the maintenance of pipe lines, and the distributing system, the smaller items of replacement.

9270 Mr. Metcalf: I think that is the general practice. For instance, if you examine the reports of the New England Waterworks Association, they report from time to time the amount expended per mile of pipe by different water companies in maintaining the pipe system; those amounts have ranged perhaps from \$10 to \$15, to upwards of \$100 per mile of pipe. Now you might say that some portion of that should have gone into the depreciation account, but that is not the normal way in which it has been accounted; it usually has been accounted as repair work, and the greater part of it has been strictly repair work. There are cases where there are short replacements in bad ground, or where leakage has developed, but usually those also, are accounted as repairs, and in part for the reason of their excessive cost.

Mr. Muhlner: What I say will be entirely contrary to what Mr. Bailhache has said, and what he has maintained. It is a fact that we have charged the depreciation account, where we have taken pipes out of the system, either along the waterfront, or where removals of pipe have been made for the elimination of that particular service of the district, we have charged that loss in value to depreciation. In as much as the Railroad Commission allows us a discretion in the handling of maintenance of say 50 feet or 100 feet of pipe in the city system, which is the result either of a break, or something similar to that, we charge that to maintenance.

Rip-rapping dam: That is the labor of rip-rapping the dam. The dams were already rip-rapped at the time they were constructed; this is simply to take care of what has been removed by the gradual wash of the waves on the dam.

9271 Replacing crossing Alameda pipe line with iron structure, \$775.79: There is an instance where perhaps the excess value of the iron structure over the original structure might be considered as construction, or a betterment. To what extent, or how much, I do not know. The company carried it as an operating expense—as a maintenance cost—for that particular line. I have no means of making a comparison between the original cost and the cost of the new structure. The alterations to the receiving tank at Niles I think refers to replacing the wooden ceiling over the receiving tank at Niles.

Laguna Creek Dam, in 1909-10, \$187, and 1911-12, \$296, charged to maintenance: From time to time the company finds it necessary to

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

build small gravel dams along the creeks around Sunol to back up the water so that more water can be stored in the Sunol Galleries. Those wash out during the winter months, as they are not permanent structures. In each year those structures are replaced, and it is an annual charge of operation.

Rip-rapping Sunol filter beds; I think that is on the stream bank. We are constantly replacing rip-rapping on the dams and other places where it is necessary to rip-rap.

Mr. Metcalf: If that work is what I think it is, in order to make the stream keep in its channel, and to force the water into the gallery during the summer season, they build these little gravel dams which are washed out in high water, and there is more or less erosion of the banks, so that there is a good deal of repair work after the highwater of the flood season. That rip-rap is not charged as an item of the structure, so far as I know.

9272

This rip-rap might be operating expense, or it might be a structure, theoretically. For instance, if your rip-rap is laid on the embankment, and the water has a very long reach, and it may cut the rip-rap at the water line to such an extent as to make it cave, and to involve repairs every year. Under those circumstances it seems perfectly proper to charge those repairs to the rip-rap to operating expenses, and yet the rip-rap as a whole would appear in the rip-rap in the inventory. That is what actually did happen at the Ashokan in New York. The rip-rap was injured by the long reach of the waves, and had to be replaced after being originally constructed. The cost of the replacement at that time was, I think, a perfectly proper operating charge, and it should not have gone again into the capital account, nor should it have been charged to the depreciation account.

The next item, building levees, temporary structures, \$396.50, is similar to the gravel dam at Sunol.

9273

In 1908-09 and 1910, the Spring Valley Water Co. replaced much of its filter gallery construction with concrete structures. This figure of \$7,000 represents the estimated cost that the company would have had to expend on the replacing and repair of the wooden galleries. The galleries cost, according to my recollection, \$18,000 or \$20,000. As to why this was not charged to depreciation, I think the answer to that is this: that had we a depreciation account of long standing, that \$7,000 would have been charged to depreciation, but in as much as our depreciation account was not begun until 1908, there was hardly enough in that account to take care of the depreciation that had accrued at that time prior to 1908. I know we had \$260,000 in it, but the proportion chargeable or applicable to this particular item in the \$260,000 would be very small. Before that we had charged up all our replacements to operation.

9274

Mr. Metcalf: I should agree with Mr. Searls on that, that if the

company had a depreciation account, it should properly have gone into the depreciation account, but up to the year 1908 they had accounted depreciation through the replacement, which simply means through the operating expenses. I take it that that question is a question for argument as to whether they had earned a return which made it possible to lay aside a depreciation in excess of a fair return, and as to the attitude of the Board of Supervisors on the provision for a depreciation account.

9275 Mr. Muhlnher: Raising gate box due to street grade. That means that we had to raise gate boxes over the pipe lines, due to change in grades in the streets, and that was charged to maintenance.

The item, moving and rebuilding camp, I believe was at Sawyer Camp; it was removed and brought down near to the Crystal Springs Pumping Station, and that, I take it, represents the cost of changing the location. Those men were engaged on operation entirely. They are the keepers and the patrolmen and the wardens of the property.

Piles to protect Alameda pipe line in shallow water. It was necessary to put some piling in along the slough around the submarine pipes so as to prevent boats from crossing there and dragging their anchors on the pipes, and in that way injuring them.

Mr. Metcalf: I think that might be well accounted as a capital expense. The only thing that might be noted, perhaps, is that it is a very short-lived property on account of the terredo.

9276 Mr. Muhlnher: Clough and Elseworth, riparian, laying pipe: In certain agreements with the Clough and Elseworth people we acquired certain riparian rights, and part of the consideration for that riparian right called for the laying of 4- and 12-inch pipes to supply them with water. I presume an item like that is questionable, and might be charged to permanent improvement. Mr. Bailhache eliminated that item entirely.

Mr. Greene: I think that item ought to go out.

Mr. Metcalf: If that has not been included in the inventory, it certainly ought to go out.

Mr. Muhlnher: Maintenance of avenue at Sunol, \$742: That is the maintenance, graveling and regaveling, and taking care of the avenue around the water temple, and to the cottage; also part of the expense of the upkeep of the road that runs from in back of the temple and meets the other road up to Calaveras.

Repairing bridge, \$184. That is the repair of a bridge down in that district. The item, gravel dams, running from 1910 on, is the Sunol Dams again.

9277 The next item, lower pump at Pleasanton: The first station of the Pleasanton Pumping Station was installed in 1909, and it ran for a year; it was found necessary after the installation had been made, in order to increase the efficiency of the pump to lower that pump; this represents the cost of that work.

Mr. Metcalf: It was my view on that that the construction account should include the cost of placing the pump once, and not twice. If that is the case, then the cost of re-erecting the pump must either be charged as an operating expense, or eliminated altogether, if it is assumed that the company was negligent in not getting proper advice and doing the right thing. It seems to me, personally, that it was a perfectly reasonable charge to put it in the operating expenses, for this reason, that it probably would have been more expensive to have placed the pump at the greater depth originally, than at the shallower depth, because of the fact that by pumping for a time the water table was lowered, and the work could be done more advantageously than in the first instance; on the other hand, it is true that doing the work in two sets undoubtedly cost in the aggregate more money, but it seemed to me on the whole that it was a reasonable thing to have carried the work on in the way they did. I do admit that the pump was more efficient after it was placed in the new position, and to that extent there is some betterment over the original location, but it is absolutely impossible to tell how much.

9278

The gross amount of changes and shiftings in location of the structure could readily be amortized over the life of the structure, and taken care of out of depreciation allowance, but I doubt if it is a desirable policy to lay down for your accounting department. I think the company has pursued a more desirable and a more conservative method. I feel strongly on the question of being conservative on what you charge into capital account as against operating account. You can treat it through the depreciation account, and then if you find you are earning too little on your depreciation account, you can increase that rate. That can be done. This is something like the Clarendon pumps.

9279

If I had the contingent reserve account which I have referred to in addition to the depreciation account, I should charge it up to the contingent reserve, instead of straight depreciation, because you would normally need it for those things in establishing the depreciation account. They are an exceptional and unusual thing, although they do occur from time to time I admit.

Mr. Muhlner: The next item, replacing portion of smokestack, \$619, is replacing a portion of the smokestack at the Belmont Pumping Station.

Mr. Metcalf: The depreciation account, as I have figured it in this case, should be reviewed every 5 or 10 years, and then raised or lowered as the experience of the interval may dictate to be desirable.

9280

Mr. Muhlner: Cleaning slope of dam, \$314.52: From time to time it is necessary to clean the face of the dam on the side toward the water. The undergrowth and the small vegetation in the water, or on the water's edge, is cleaned up, taken out, dried and burned.

The item, building rock entrance gate at Crystal Springs Reser-

voir, \$503.70; I made the actual transfer of that amount, which apparently Mr. Bailhache did not see. In other words, that amount has already been deducted from my total operating expenses. I think it was made in June, 1912. To deduct that here would be a duplicate deduction.

9281 The item above that, "installing new engine in launch", is the cost of an entirely new engine, and the installation. Those launches are not carried in the inventory, according to my recollection, or in the capital account. They are included among the tools, and other equipment as necessary for the operation of the business. They are \$200 or \$300 apiece, and it is easier to handle them at the time of purchase by charging them off. They are in the same category as the automobiles.

Fill around tank for planting, \$342.75; you will find also in my transfers carrying some of the operating charges in June, 1912, that I took that out. I have an item here "transfers of \$3,638.51". Transferring certain items from operating expense to construction. That consists of filling the avenue to even grade, and includes grading the avenue around the temple. That item has already been deducted from operation also, and the same is true of the item of \$161 fill around entrance gate.

9282 Mr. Bailhache: In going through the distributing ledger account, I took all the debits and credits against those things as far as I found them. If there are credits written in the journal in the ensuing years, I might not have seen them, and they might not show here. At the time when these accounts were made up, all the debits and credits were taken.

Mr. Muhlner: I can very readily see how Mr. Bailhache might slip up on a case like this; in going through, for instance, the accounts of January, he might see an item of \$300 or \$400 which he might construe as being a proper construction item; he might accidentally overlook the credit to that account in the month of June.

Mr. Bailhache: A great many times credits are put on a year or six months after an account is closed, and it refers back to it.

Mr. Muhlner: You know we keep our books by the calendar year. The credits came in in the same calendar year.

9283 Mr. Muhlner: Perforating and cutting wells at Pleasanton, \$351. That was the perforation of existing wells that were not being used prior to this time, and preparing them for re-use by perforating the casings so as to permit the water to come in. My recollection is that the original casing that was put down was perforated, and was charged at the time the work was done to construction. Our capital account, I am very sure, carries that as a capital asset. When we came around to perforating the casing, or putting a new casing down in the well, we charged it to operating expense; otherwise, we would have a duplicate item in our capital account.

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The next item, "change power line": That was done in connection with the lowering of the pump at Pleasanton. It was necessary to change the power line. That is the same category as that other charge.

ONE HUNDRED AND TWENTY-SEVENTH HEARING.

MARCH 30, 1916.

Witnesses: F. P. MUHLNER for Plaintiff.
S. P. EASTMAN for Plaintiff.

Witness: F. P. MUHLNER for Plaintiff.

DIRECT EXAMINATION BY MR. GREENE.

9284

The following statements were introduced by Mr. Muhlnert. One with reference to the condemnation suit detail, and the other a segregation of engineers' salaries:

MEMORANDUM OF ENGINEERING DEPARTMENT SALARIES OF THE FISCAL YEAR 1912-1913, EXCLUDED FROM OPERATING EXPENSES BY

MR. J. M. BAILHACHE, IN THE EXHIBIT NO. 125, OF
THE CITY AND COUNTY OF SAN FRANCISCO.

Note:—Refer to Spring Valley Water Co. Exhibit No. 176, Page 12, showing this deduction in total—\$9,738.78.

9285

Character of Work—	Total	1	2	3	4
			City's Charge to New Construction, Vol. F, Exhibit No. 125	Eliminations by City, Volume F, Exhibit No. 125	Eliminations by City, Volume F, Page 75, Exh. 125
Lake Merced Contour Survey.....	\$ 834.00	\$ 834.00			
Woodside Survey	801.85	801.85			
Herrmann Report No. 1, for assembling of Engineering Records and data; and for preparation of reports for hearing at Washington..	3,965.46			\$3,965.46	
Herrmann Report No. 2 do do	1,131.90			1,131.90	
Schussler Report do do	463.87			463.87	
Elliott Report do do	70.00			70.00	
General Engineering Dept. Records, etc.	1,262.65				\$1,262.65
Work on Dockweiler's and other city report	442.80				442.80
Other Spring Valley Reports.....	30.95				30.95
Hydrographic Work.....	542.20				542.20
Work on Relief Maps.....	4.80				4.80
Work on Atlas Maps.....	170.10				170.10
Crystal Springs Pump.....	18.20				18.20
	<u>\$9,738.78</u>	<u>\$1,635.85</u>	<u>\$5,631.23</u>	<u>\$2,471.70</u>	

Note:—The items contained in Column 2—\$1,635.85 and
" 3— 5,631.23

Total \$7,267.08 are duplicate deductions, these identical items were deducted by Mr. Bailhache in City's Exhibit No. 125, Volume F, Page 75 (in \$9,738.78) and again deducted by the City in City's Exhibit No. 125, Volume F, page 82.

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SPRING VALLEY WATER COMPANY

EXPENDITURES INCURRED ON THE CONDEMNATION SUIT INSTITUTED BY
THE CITY AND COUNTY OF SAN FRANCISCO AGAINST THE
SPRING VALLEY WATER COMPANY FOR THE CAL-
ENDAR YEARS 1913 AND 1914 AND 1915.

9286

1913

Salaries, City Distribution Dept.....	\$ 1,007.87	
Engineering Department.....	5,503.89	
Bureau of Statistics.....	1,525.63	
Water Sales Dept.....	2,378.40	
		\$10,415.79
Survey Lake Merced.....		3,085.14
Engineers, Fees and Expenses.....		3,277.73
Out samples of pipe (balance or ½ cost borne by city)		671.05
Charges originally carried in Legal Expense		
Salaries	1,190.50	
Miscellaneous	516.05	
		1,706.55
General Miscellaneous items, Blue Prints, Stationery, Rent of Furniture and Water Division Charges, etc.		3,239.89
Total		\$ 22,397.15

1914

Salaries, Engineering Dept. and City Distribution Dept.	15,783.18	
Bureau of Statistics.....	7,372.33	
Water Division Charges.....	4,646.91	
Engineers' Fees and Expenses.....	50,896.01	
Real Estate Experts' Fees and Expenses.....	10,130.00	
Print Inventory.....	2,837.67	
Miscellaneous	3,838.96	
Total		95,508.06

1915

Engineers' Fees	600.00	
Real Estate Experts.....	200.00	
Engineer's Dept. Salaries.....	84.50	
Miscellaneous	60.08	
Total		944.58
Total		\$118,849.79

NOTE:—In 1914 it was decided that the expenses incidental to the Condemnation Suit should be pro-rated on a basis of 60% to Condemnation Suit and 40% to Water Rate Suit, on the assumption that some of the records compiled would be used for both suits. In as much as the 1913 accounts had been closed, it was too late to make such a distribution of the expenses for that year.

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Corrected distribution is:

Calendar Year	Total Expenditure	60% Condemnation Suit	40% Water Rate Suit	9287
1913	\$ 22,397.15	\$13,438.29	\$ 8,958.86	
1914	95,508.06	57,304.84	38,203.22	
1915	944.58	566.75	377.83	
Total	\$118,849.79	\$71,309.88	\$47,539.91	

Memorandum of above items for fiscal years:

Fiscal Years	Total Expenditure	60% Condemnation Suit	40% Water Rate Suit
1912-13	\$ 503.58	\$ 302.15	\$ 201.43
1913-14	98,120.19	58,872.11	39,248.08
1914-15	20,226.02	12,135.61	8,090.41
Total	\$118,849.79	\$71,309.87	\$47,539.92

Note:—The above items do not include any allowance for Legal Fees.

These segregations represent the facts as they appear on the books. 9288

The segregation between the condemnation suit and the water rates suits, on the basis of 60% for condemnation, and 40% for the rate suits, was made on Mr. Eastman's authority. Undoubtedly much of that record that was compiled was used in both the rate suit and the condemnation suit. It was prepared for the condemnation suit, and that distribution was made before we had any idea whether the suit would be tried or not. It has never come to trial. 9289

Mr. Metcalf: I was asked, a year ago, to make a segregation, if possible, between the two suits on the engineers' bills, and therefore it was made at that time. As I remember it, it occurred about the time, or shortly after the active negotiations had been in progress in the condemnation suit, but since that time I do not remember having made any further segregation.

I think, in a general way, it is true that practically all the work that was done by the engineers and their assistants for the condemnation suit originally has come into use and been used in these rate cases. It was my impression, however, that additional time was required on the part of certain men—myself, for instance, as one of them—in connection with the preparation of data for Counsel at the time that the active negotiations were on foot with the city. How large a matter that was, I cannot now tell you. I really do not know. 9290

Mr. Muhlner: I have made a note at the bottom of that segregation that the above items do not include any allowance for legal fees, so there are no legal fees included. In the general legal fees which I segregated yesterday there were not included special allowances for the services of Counsel in the condemnation suit.

The item of \$100 in relation to the report of Mr. Mulholland, was for a report by Mr. Mulholland, made to the management of the com- 9292

pany to adjust an arrangement with the Stanford Estate as to whether it would be a practical thing to remove the sediment that had banked up in Searsville Lake. The item is applicable to the non-operating expense account of the Portola Reservoir, and not chargeable to the subdivision work of the Searsville lands.

9293 An item of hydrography on page 9135 of the testimony; a question was raised as to whether this hydrographic work during 1911-12 was not for the preparation of reports to the Secretary of the Interior, in November, 1912. I have the copies of the distributing ledger here, showing the details of those items, and no notation was made that it was for the purpose of that report. The ledger shows simply a voucher in reference to Mr. Espey's salary and expenses, and those of others connected with him in the preparation of that data as to Pleasanton and Sunol, and principally on the Alameda properties. The work was not for a particular report; it was just for the general hydrographic records of the company.

9294 Inquiry was made yesterday as to whether, in the preparation of that report to the Secretary of the Interior, in 1912, there were perhaps included salaries of the regular force apportioned to that cost, in order to show the total cost of that report to the company. Such was the case. There were salaries of regular employees, which would have been charged against operating expenses of other departments at that time if they had not been at work on that report. There is no deduction there; they were simply taken off one piece of work, and put on this other work.

The matter of rip-rapping at Sunol was raised yesterday. I find that the rip-rapping in question was rip-rapping on the Sunol Dam. From time to time it is necessary for the company to replace that rip-rapping. It is very often washed out at high water periods, and in that respect would be a proper charge to maintenance.

9295 The next is the matter of perforating and cutting the wells at Pleasanton. Certain wells at Pleasanton were dug some years ago, the work of which was charged to capital account, and is so carried on the company's books. At the time those wells were constructed or dug, the whole casing was not perforated at the point of the water-bearing gravels; it was not until these wells were actually put into use, I believe, in 1909 or 1910, that they had to put the machinery there and puncture the holes in the side of the casing that was already down in the wells at the water-bearing gravels. Had that work been done at the time of the construction of these wells, it would have been practically nominal, and would have been classed as a part of the construction cost, but coming at this time, perhaps several years after the original work has been done, there was quite a heavy expense. It undoubtedly increased the value of the structure.

Mr. Metcalf: The reason why a well would not be perforated at

the time of the construction would be probably because at the time of driving the well you expect to drop inside of that well a casing, and then raise the outer casing, or it may have been that they were uncertain about the material, and so preferred to use a tight casing instead of a perforated one. There are several different ways of driving a well, and several different types of casing. The best of them I think is the Cook well casing, which was first developed in St. Louis, in which a thin metal casing is perforated with circular grooves, leaving just a section of pipe uncut between the segments of the circle, and that is reamed away on the inside so that it will not clog; that is dropped into the well after the well is driven to the desired depth, and the casing is withdrawn for a certain distance, letting the material of the well come in against the Cook well strainer. There are also some casings where a point is put on the end of the pipe, and segmentary slots are either cut on the outside, or else the pipe is perforated; sometimes a screen is put over that, and sometimes it is not, depending on the character of the material used.

9296

The perforations, particularly of a certain type, tend to weaken the pipe by reducing your section of solid material. If the material is hard, and the wells are driven by force, it may cripple the point. Of course, ordinarily they are driven with a water jet put down through that casing, which will wash up the fine material, and so the pipe is sunk with the combination of the water jet, and driving on top of it, but where the material is hard it sometimes results in crippling the casing. For that reason, and for the reason that it will drive the perforations down for the entire distance, you are apt to close some of the slots so that you don't leave your opening as perfect as if you dropped them subsequently.

I cannot answer positively as to what engineering reason there would be for deferring the perforation until it was ready for use. It might be that the wells were originally driven with the idea of using them as pilot wells to observe the ground water level in those wells, and not to use them for active pumping, with the idea that ultimately, as the demand grew, they would be connected up and used. Whether that was the case or not, I am not informed.

9297

I think on that situation it is a capital charge. The only question was as to whether, under this method of construction, the cost was much greater than it would have been if the wells had been driven to immediate utilization. If these were pilot wells, it would have been cheaper to convert them into operating wells in this way than to drive new operating wells.

Mr. Muhlner: I looked up the question of automobiles, and I find that the automobile equipment is not included in the inventory until December 31, 1914, and that inventory does not contain any of the automobiles included in this list we were speaking of yesterday,

consisting of the amounts in the deductions that Mr. Bailhache has made. That is, those deductions cover the machines other than the small machines used by the field force.

9298 Mr. Metcalf: We also looked up the matter referred to on page 9223 of the record, the raising of the stand-pipe at Belmont. While the stand-pipe was raised in the first instance in connection with the determination of the capacity of the pipe line, it has been used actively, so that I think it would have been a proper charge to construction account rather than to operating account.

I have also looked up the reference on page 9231 of the record, in Mr. Hazen's item of \$10,400 for miscellaneous planting, which occurs in his inventory list, and I find that it covers the planting about certain of the reservoirs, cottages, and so on. Mr. Muhlner tells me that some of the items were duplicated or covered by the operating account.

9298-9301 In connection with some reference that Mr. Searls made yesterday, in cross-examination, in regard to the charging of items in operation into capital account or depreciation, there is contained in a recent book by Mr. Fred L. Holmes on the regulation of railroads and public utilities in Wisconsin, a paragraph that bears directly upon this point. It is on page 83, and the author is discussing here the question of depreciation. He says:

"Before the era of regulations, little attention was paid to depreciation. Instead of setting aside a reserve to take care of it, this amount was included in the net earnings to be divided among the stockholders. What renewals were necessary were generally charged up to new construction, upon which new capital issues were predicted. This method of watering and re-watering went on until rates became excessive, or until it was no longer possible to secure money on new stock issues. The evil of such a system, pointed out in numerous decisions by the Commission, has been expressed thus":—then he quotes from one of the opinions. In re Menominee and Marinette Light & Traction Co., 1909, 3 W. R. C. R., 778-790.

And then he goes on as follows:

9301 "When depreciation is collected from customers, it should be devoted to the upkeep of the plant, and not diverted to the stockholders. This the consumers have a right to demand. To turn over the depreciation so collected to the stockholders is equivalent to paying dividends out of the capital, for such depreciation is the amount that is required in order to keep the investment intact. Such use of amounts collected from the consumers for depreciation, under the conditions named, might even furnish justification for demanding that it either be restored to the depreciation fund, or deducted from the valuations upon which rates are based".

It is not my idea that a street railroad which has to reconstruct a track a number of times by reason of changes of grades put that into

capital account. It is my idea that expenses of that sort will be carried directly by the operating account, unless you have some contingent reserve fund to take care of work of that sort. The only difference is that it amortizes it over a period of years. The reproduction theory could not readily take care of it. That is one of the things you lose absolutely in the reproduction theory. In the reproduction theory you would allow for the reconstruction of the line once, and in a similar way, under the original cost theory, you would allow the original cost of the construction the last time that it was done, practically; that is, it would be the cost of doing it originally, plus the betterments involved in the relocations subsequently undertaken.

9302

Mr. Muhlner: Item No. 14; "Repairs, maintenance and alterations, filling the avenue north of pump station, \$545.92": That was taken out by me in June, 1912, and charged to capital account. The deduction has already been made. That was in the Sunol filter bed account.

My total operating expenses for these years agree with the total reported by Mr. Bailhache, with the exception of three years; the first year being 1907-08, and second 1909-10, and the third 1910-11. 1909-10 and 1910-11 are compensating years. That is, the difference in one year are taken care of in the next year, so that the two years together agree. It was in the years prior to 1910-11 and 1911-12 that I reported \$16,000 too much in one year, and \$16,000 too short in the next. That was in the years 1909-10 and 1910-11. The subsequent years, I am very sure, are correct.

9303

If Mr. Bailhache took my total figures for the operation expenses of that year, and did not find the credit there, he would not be justified in making the deduction. If it were true in this particular case that the credit was not there under that particular heading, it would mean that I made the credit afterwards, and it would alter my figure from the amount he took, but in this particular case it is not true, because the correcting entry was made in June, 1912, so that that would apply in the 1911-12 rate suit. Here is a copy of the entry in the journal, Sunol filter beds, from operating to Sunol filter beds, construction; fill around temple, \$573.75.

I have made a notation here, installing bulk heads on account of continual sinking of ground and washing away of continual fills. This would not really be a temporary or an annual operating charge; it takes the place of an annual charge. That was done in this year to eliminate that continued operation cost. I think that can be very easily conceded.

9304

Mr. Metcalf: I think you can take that as a conceded capital item.

Mr. Muhlner: Drain ditches, \$528: That represents the cost of draining ditches. It becomes necessary to drain out those ditches be-

9305 fore the high floods of the winter season comes so that the ground around there will not be washed away. This represents practically a charge that occurs from year to year.

9306 The item, lumber for bridge work, \$184, is bridge work, repairs to bridges. It is not new construction.

Two items for water fountain; one for \$237, and another for \$248.72. That is on page A of the 1911-12 accounts. One was at San Andres and the other at Pilarcitos Reservoir. They were small fountains put in on the dam for the convenience of the people traveling over the reservoir, so that they would not go down, in case they wanted water, into the lake and dip it out from the lake. I don't know whether that was inventoried or not.

Mr. Metcalf: That is a construction account.

Mr. Muhlner: Repairing and replacing walks on trestle, \$398.58: That is part of the \$168.31 shown in the Belmont pumps, and \$230.27 in the Millbrae pumps. It was necessary to place walks on the side of the trestle over what was the old coal bin where the fuel oil cars are sent in to discharge fuel for the pumping station. These walks were put on for the convenience of the railroad men, and to remove the hazard of possible injury. This is a sidetrack. My recollection is that there were always walks on the sides of those trestles.

Mr. Metcalf: If the J. G. White inventory were followed, I think that that probably was not included, because the work was done subsequently to the making of that inventory; if, on the other hand, they actually measured up that trestle again in going over the inventory, it was included, undoubtedly, in the inventory. In a general way it is true that the J. G. White inventory was brought to December, 1913, by the addition of everything that was done during the subsequent year as a matter of field examination by the engineers, but as to this particular item, I cannot say. An item of this sort, unless they went through with books in hand, they would not be likely to see on the ground.

9309 Mr. Muhlner: Rock wall at cottage, \$254.58—that might be construed as construction; it was putting a rock wall around the portion of the cottage near the lake to take the place of a fence. The alterations to porch at cottage undoubtedly is operating. The gage boards and steps were not new. Those were replacing those already there.

9310 Ornamental tables and garbage cans, \$550.36. These are the first ones that were acquired. I think this was the cost of the original mold, and includes some of the expense of the garbage cans.

Mr. Metcalf: I think that is properly a construction charge.

Mr. Muhlner: Suspension bridge, Sunol Dam, \$448: I think that is a temporary bridge that was constructed for the purpose of making hydrographic records of the flow of the creek at Sunol. I think it is there at the present time.

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

Mr. Metcalf: It is still there, and undoubtedly will be used for several years. I think they are fairly described as temporary structures.

Mr. Muhlner: The next item, lower suction in well, \$117; very often it is necessary, because of the filling up by gravel and other sediments in the well, to lower the casing.

The two or three items above that inserted in a bracket, and marked "credit", are the result of debits and credits that Mr. Bailhache has taken exception to; in other words, he took so many debits and so many credits, and the result is a credit balance, so that this ought to be added to operating expenses instead of subtracted. Mr. Bailhache has added it; in other words, his net deductions take that credit into account.

The next item is rock pier at end of flume; that is replacing the foundation at the end of the flume, and would be a proper charge against depreciation account if we repaired or replaced a large portion of the foundation under that flume, but this very likely did not spread over 50 piers, or maybe 25 piers. The new weir iron is not new construction. That takes the place of one that was there formerly.

9311

Pages 36 and 37, Volume F, Exhibit 125, blow-off and air valve, \$521: These are made up of a number of items that are comparatively small. They are construction items, but from the fact that they are small, we charged them to maintenance. I think these were new valves cut into the line.

9312

Mr. Metcalf: If that is the case, I presume it is a proper construction charge, subject to the comment which I made before with regard to the greater cost of doing such work in this piece-meal fashion. I should think that might be fairly carried into construction.

Mr. Muhlner: Alterations and repairs to a portable pump; that pump is used to pump out holes that become filled with water when the pipe lines break or leak; in other words, it facilitates the repairs to the pipe line.

Mr. Metcalf: That is an operating increment, and it seems to me is a proper operating charge.

Mr. Muhlner: Protecting pipe on account of the State Highway, \$113.51; it was necessary, while the State Highway was being built in San Mateo County to protect our pipe; in some places they put a shield over it, and in other places simply sent a man out to watch the contractor to see that they didn't pick into it.

Mr. Searls: I think that is a proper operating cost.

Mr. Muhlner: The next item, blow-off, city pumps: The purpose of that was so that when something should happen on the force main of the city pumping station, it would not be necessary to shut the pumps down entirely. In other words, they could pump out of the lake, and

run that water back into the lake instead of wasting it, as they formerly did. That was practically the installation of a new connection.

9313 Mr. Metcalf: I think that is a proper construction account.

Mr. Muhlner: The next item, 41st Avenue tank raising: In order to equalize the pressure at the end of the Lake Honda District, at 41st Avenue and the Beach, and to assist in the supply of water to residents in the immediate neighborhood, it was necessary to raise the 41st Avenue tank; this represents the cost of raising the tank.

Mr. Metcalf: I should think that is in the same category as raising the stand pipe.

Mr. Muhlner: Yes, with perhaps these exceptions, that you would have an added cost to your structure, and your structure would not be any more valuable to the extent of this additional charge.

9314 Repairing flume at Lake Honda: That is the repair of a little flume out at Lake Honda.

Cleaning ditches and stumps, \$1,400: That is cleaning ditches, Alameda County, and cleaning out stumps. Those ditches are cleaned out from year to year for agricultural purposes. It is very often necessary to grub out stumps, partly for the protection of the fire hazard, and partly to get better drainage, and for more convenient agricultural purposes. I think that is in the Pleasanton property.

9315 Mr. Searls: If it is an item of clearing out the ditches, I think it is a proper operating expense on lands which we admit are in use; if it is on the ranch lands, we contend it should be excluded, on the ground that it is not used or useful. In so doing, we omit the income from those lands.

Mr. Muhlner: The next item is replacing pumps, and a heater: That represents a replacement of a small feed pump, and a water heater at one of the pumping stations, and is the replacement of a small unit used in that station. The two transformers down lower are one for Ravenswood, and the other at Pleasanton. Those were not new transformers, they replaced others that were there before.

9316 Mr. Metcalf: I think those four items; the feed pump; the water heater, and two transformers, might properly be charged to depreciation. I think we can admit that. I assume, of course, that it was a natural retirement, and not an abnormal one, growing out of something which seriously shortened the life of the property.

I don't think the gravel dams have been appraised by Mr. Hazen that are referred to on the next page of this exhibit. These dams here referred to are simply little mounds of gravel which are thrown up across the creek to keep back the waters, and force the summer flow into the gravel, and thereby increase the yield of the galleries.

9317 Mr. Bailhache: On page 33, Volume G, the items says, "Labor, 'time and material laying new pipe at Homestead'". It was deducted and charged into capital account as a capital addition, being a new pipe.

Mr. Muhlner: The facts are that we had a large break in the Alameda pipe line near the Homestead, and it was necessary, in order to properly repair that break, to put in 75 or 80 feet of pipe. It is true it is an unusually large break repair account, but it is something that is likely to happen, and something that perhaps does happen from year to year. It is my recollection that that is a section of the pipe that is laid in that bad ground where there has been more or less leakage from time to time, and where sections have been replaced.

Mr. Metcalf: I remember one repair of that sort has been made on that Alameda pipe line since I have been here. That was strictly a repair account. I think some of that on that pipe line, in the section to which I refer, is due probably to salts in the soil, which make that pipe deteriorate rapidly for a short section of, say a few hundred feet. Repairs have been more or less marked in that section. That is a short section where the pipe has lasted but a very short period of time, and no consideration has been given to that in measuring the probable life of the pipe lines.

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I don't mean that when you measure the possible life of a pipe line, as a whole, that you are going to have exactly the same life for every section; I do mean, though, that injuries of this sort—localized, just as you will have electrolitic action near the power stations from the returning current, we always charge into repair account, and not into depreciation. It is true that a structure may depreciate for a number of years, and then be rendered useless by the action of some element like water pressure, or corrosion from without.

Mr. Muhlner: The next item is concrete man-hole and drain to repair re-occurring leaks, \$233: On the Crystal Springs pipe line it was necessary to construct a concrete man-hole and drain to repair leaks which were caused by the lead sleeve. On the contemplated construction of the highway, together with the tendency of the lead sleeves to leak, it became necessary to construct such a man-hole so that other repairs could be made economically. The net cost of that was \$196.52. Mr. Bailhache takes exception to \$233.96. The idea is that the highway construction was then contemplated, and we had here in this situation certain lead sleeves, and we desired to make provision so that we could get at them without having to take up the highway.

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Mr. Metcalf: We look at it as one of those things under original construction you would do in a different way. Here a leak developed, and they put on a sleeve, and it was difficult to keep those joints tight; that necessitated certain other construction costs in order that the operating cost of making the repairs repeatedly should not be excessive. I, personally, feel that the company has pursued a reasonable course in charging that to operating expenses.

9320

Mr. Muhlner: Removing and re-installing the entire smoke-stack at the city pumping station. That work was done in January, 1914; in December, 1914, I have credited the operation cost of the reinstallation of that smokestack, charging to depreciation and obsolescence the value less the salvage of the old smoke-stack. That has already been deducted.

Replacing impeller: That was at the Ravenswood Booster Pump. After the pump had been running for some time, they found it necessary to replace the impeller for one which was more efficient. This is the cost of replacing, less the salvage there was on the original impeller.

Raising receiving chamber: At the Pleasanton pumping chamber No. 1, the receiving chamber was raised and tiled in place of a wooden covering. This represented the total cost of that piece of work.

9321 The item of irrigating pipe for land expense, \$705, was for irrigating pipe for agricultural lands, similar to the item we spoke of a few moments ago. It would not be a capital charge if it is for agricultural purposes; it is part of the expense of renting those properties. If it were a permanent construction, it might be construed in the same category as the buildings on lands.

Mr. Ellis: Taking it according to the description there, an "11-inch irrigating pipe", while generally it is an odd size, it is quite a common size pipe used in hydraulic operations. It is just a regular slip-joint pipe. It is laid on the surface of the ground.

9322 Mr. Muhlner: The next item, repairing bridge at Mud Dam, \$226; that is work at the Pilarcitos Reservoir, repairing the bridge at the Mud Dam. The next item is \$376.75 for lavatories and toilets at the Temple, made necessary by the number of people going down there on Sundays, etc.; the water had to be protected through that means.

Mr. Metcalf: That is proper construction.

Mr. Greene: We will concede that.

9323 Mr. Muhlner: 30-inch pipe shields to protect pipe in lieu of lowering pipe; that is on the San Andres transmission line. It is installing a portion of a 30-inch pipe over the pipe line so as to protect that pipe in the roadway, due to the lowering of the grade of the road. Had the company decided to lower the pipe, instead of putting the pipe shield over it, it would have cost many thousand dollars over this.

Mr. Metcalf: This does not represent the value of the pipe with this protection on it. We think the pipe is more valuable located near the surface of the ground before that portion of the ground was cut off.

Mr. Muhlner: The next item, 14-A, represents maintenance

and alterations to pumps, and is concerned purely with the pumping station.

Buildings: Consists of alterations and re-arrangement of the buildings around the company's property, and particularly applied to the building we rent at 375 Sutter Street for use for general office purposes. It includes the vault built from the ground up through the building at 375 Sutter Street, and it includes the vault doors, and replacing some of the vault doors. It also includes the installation of metal windows along one side of the building wall; it includes the re-arrangement of partitions inside of the building from time to time, as it has become necessary in the growth of the various offices to increase their office space. The reason that those things are handled through the maintenance account is that we have only a leasehold on that property, and at the termination of that lease, they cease to become valuable. I think the lease terminates in 1918. Such an item as vaults may be amortized over the period of the lease, but I don't think the item of partitions, which change each year, could be properly so charged.

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Mr. Metcalf: On the seventh floor, where we have been at work, the partitions have been changed several times; that is only temporary. I think the vault work, and the metal windows, might well be charged over a period.

Mr. Muhlner: I have no segregation of those items to show what the vault cost, or what the windows cost. Those two items were included in the years 1908-09 and 1909-10, when the vaults were built. For the first four floors the vaults were charged to rehabilitation work; from the fifth to the seventh floor, inclusive, was charged against expense. There are other items here besides alterations on office buildings. There are alterations on buildings outside of San Francisco; the Crystal Springs cottage buildings; the keepers' houses at Crystal Springs, Pilarcitos, and San Andres. That was not new construction of those houses. It was alterations and repairs, changing about the rooms, a little replacing work on the roof, or on the chimneys.

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I know that Mr. Bailhache did deduct some items, and a considerable number, of ordinary maintenance charges in this list of deductions that he made.

Mr. Bailhache: My intention was not to deduct anything in the nature of general repairs to roofs, or repairing, or anything of that nature, but simply to take up large items of additions to property where porches were built on, and where rooms were built on to the house, and where bath tubs were installed, and various additions made to the property; those I deducted. Any small item of repair I did not deduct, so far as I know.

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Mr. Muhlner: The item, road work, represents the cost of maintaining roads on the company's properties, and also the cost

of installing some new roads on some of the agricultural properties for the use of tenants, simply grading off some roads so as to make ingress and egress an easy thing for tenants of the property. That is a very large necessity on the Peninsula on account of the washing out of considerable portions of those roads.

9327 Mr. Bailhache: All the deduction I made for road work was made for new roads, and improvements on new roads, putting gravel on them, and adding to them. If I had a washout on one of the Peninsula roads, and the road had to be reconstructed at that point, I would not make a deduction for that item.

In some cases I got at the charge to know whether it was for a new road or for an old road from the work application, and in other cases I got at it from items relating to it, showing that new property was being opened up, and new roads being constructed. A great many of the roads were built on new properties. I remember one item of gravel around the Sunol Water Temple, of \$90, where gravel had been put on a new road, and I think I took that. I did not take charges for graveling roads universally as operation or construction. I did not have any general principle about it; it was simply a matter of ascertaining the facts as far as it was possible to do so.

9328-9329 (Certain corrections noted in the transcript.)

9330 Mr. Muhlner: I have made an analysis of some of the items that Mr. Bailhache stated he had not taken into account in his eliminations. The point was, I believe, that ordinary repairs and painting of buildings had not been taken into account by him in his elimination; I find many items where those cases have been taken into account by him.

9332 In the 1909-10 book, Volume C, page 19, tin gutter for drain pipe, Presidio Tank, is shown in Mr. Bailhache's exhibit as a new gutter to replace one already there. The new fence right above it for Lombard St. Reservoir does not appear in this list. The 30-gallon boiler for the keeper's house at 32nd and Caroline St., was to take the place of a boiler that was there formerly.

Eastman Witness: S. P. EASTMAN for Plaintiff.

9333 DIRECT EXAMINATION BY MR. GREENE.

9334 The general policy of the company has been, in cases of new construction, to charge the actual time of any employees of any of the departments, to the new construction. That is, such time as they actually put in in directing or participating in the work. The general officials salaries, so far as new construction is concerned, have not been pro-rated to the new construction account, because their connection with the new construction is incidental.

The officials are in touch with the work, but the task of carrying it out is delegated to the department heads, and special employees, and their full salary is either charged to the work, or such a pro-ration of it as they actually put in on the work. For instance, the engineer would devote one-third of his time, as nearly as he could tell, to any particular new construction job. Then at the end of the month, as the work progresses, one-third of his salary would be charged to that. The same would apply to draughtsmen, or any other regular employees on the salary list who did actual work in connection with the new construction.

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That includes the chief engineer. Our purpose there is to charge all of his time in a direct ratio as to the percentage of it that he puts in on the work. That is done each month, when he can pretty well judge as to the proper fractional portion of his time devoted to it. One difficulty there is in avoiding any tendency toward charging to capitalization any item which should not go into it. Our policy is to charge any doubtful items to operation rather than to capital.

In the case of land acquisitions, which in some years is a very substantial amount, the policy of acquiring the land was generally formulated by the executive committee, and the president of the company, and the task of acquiring the land was delegated to real estate experts who may have devoted all their time to it; in any event, the basis has generally been to pay 5% commission to real estate men for acquiring lands. Sometimes those percentages are divided among from one to three or four men, and those men devote a great deal of time to it. The officials, in view of that method of acquiring lands, do not have to devote much of their time to it. In the year 1911-12 the real estate acquisitions were \$2,078,825. The labor of acquiring that land was delegated to four real estate men, and a commission of 5% was divided up amongst them. I think there was only one official of the company who devoted any of his time to that, and that was myself, and whatever time I may have devoted to it was largely at night. That is, it did not, in any way, interfere with my operating duties, and it would not seem to me fair that I should pro-rate any of my time to it so far as a charge is concerned. That is generally true of other real estate acquisitions. That is, the officials of the company have not had to devote such a part of their time to it as would seem to warrant a charge on to it as a capital charge.

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The proportion of my time, and the president's time, which is given to new construction during the period of these cases, would, by my guess, be under 10%.

There were several factors that actuated the company in taking up hydrographic work. First was the desire to obtain as much actual measured information as possible upon the stream

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flow that made up the present water supply, as well as the future development. Secondly, to have that information in order to meet litigation, and the unsettled conditions between the company and the city, and between the company and contiguous communities. Third, to make a showing before the Secretary of the Interior at that time with reference to the present development of the resources of the company, as well as the possibility for future development. In that connection we were asked by the Army Board of Engineers, appointed by the Secretary of the Interior, to furnish them with all the available information on the present and future supply of the properties of the Water Company. We undertook at that time to do a considerable amount of hydrographic work, and felt we were warranted in doing it, not only for the reason that we were requested by the Army Board of Engineers to do it, but also for the other reasons I have given.

9338 The principal expenses for that year for the installation of gaging stations, and the time of employees in making the investigations incidental to getting that information. The work since that time has been carried forward each year. At about the time that work was started, Mr. Freeman, who was advising the city, also advised the company as to the expediency of the policy of spending money in order to determine with accuracy the dependable yield of the company. In that connection I will read a quotation from a telegram from Mr. Freeman, dated November 12, 1912. He first refers to preliminary records that were not felt to be quite sufficient. Then he says:

"I believe that premature distribution of erroneous computations is not helpful, and that it is far better for the City and the company to unite in some new, first-class, scientific measurements of Alameda flood flow during the present rainy season"—that is for the season 1912-13—"for obtaining a new rating table in quantities pertaining to various heads over Sunol and Niles dams, meanwhile setting scales at points of original observation, and restoring obstructions near Niles man-hole to former condition. John R. Freeman."

9339 The investigations were commenced prior to this telegram, but carried forward after this date on a larger scale than they had been prior to that time.

9340 It is rather difficult to say whether there was any of this work that would not have been done had there not been the controversy that there was at Washington. More work was done at that particular time, due to the then presence of the controversy at Washington, than would have been done. I think all of the work would have been done subsequently. I feel now that the work having been done at that time, it has been to the advantage of both the City and the company, because a good deal of time and consideration were given

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to bringing about conclusions on each source of supply from the data gathered at that time. It afforded a basis, and since that time the work has been carried forward, and corrected from time to time, and I think we are further ahead today than we would have been had we not done the work then. The data which I am referring to amounts to a charge of \$5,398, all of which was for the salaries of employees, and the incidental expenses in connection with gathering that hydrographic data.

Mr. Muhlner: That does not include any consulting engineers' fees. They were taken care of in that figure of \$24,000, or the cost of that report to the Secretary of the Interior. I think that particular item embodies some matter that would be necessary in connection with the hydrographic service of the company for its ordinary operating purposes.

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Mr. Eastman: On subjects as large in their scope as some of those investigated and reported upon by the various engineers, I think it is a very good policy to get as much corroborating evidence and opinion as possible; those reports have since been used for extensive acquisitions; we are, for instance, at the present time negotiating with the community about Pleasanton for the settlement of matters that will be very advantageous to the company, as well as to the City. We feel warranted in doing that, and safe in our ground, by virtue of the fact that we have confirmatory evidence on those subjects. Possibly, if we did not have any of those reports, we might feel that we would have to let a good deal of time elapse for the study of those questions before we could take up such negotiations. We have used those reports on other occasions, and they have probably been fully as valuable to us as we thought they were at the time they were made for the purpose of filing them with the Secretary of the Interior, and while we may not since then have gotten exactly the same reports we did at that time, I feel we would have gone out and acquired as much information. We were, however, prompted at that time by the question before the Secretary of the Interior in doing it at that time.

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Questioned by Master.

I don't think so much of the expenditure of \$24,000 would have been taken in 1912-13 if it were not for the Washington controversy. Undoubtedly a part of it would have.

9343

DIRECT EXAMINATION BY MR. GREENE.

All of that amount would not have been incurred in that one year under normal conditions. Had it not been for that particular issue, we would only have spent a part of that money.

Referring to the J. G. White & Co. appraisal: the basis of the motive to obtain an appraisalment goes back to the destruction of the company's records by the fire. There was a good deal of difference

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of opinion in matters with reference to the fixing of rates between the company and the members of the Board of Supervisors, many of which we felt might be cleared by such an inventory. I think it was in November, 1912, that the company finally decided to have an inventory and appraisal made of its properties, and employed J. G. White & Co. to make such an inventory, with instructions that the inventory was to be completed by February of the following year in order that it would be available for the rate fixing period by the Board of Supervisors. That was one of the purposes.

Another was that the company felt that it was good business to have an inventory and a valuation made; it felt that the sooner that could be undertaken, the more advantage would accrue from it in getting matters in better shape, and assisting in better operating methods. When the work was about halfway completed, we were asked by the Railroad Commission to reopen the books of the company in conformity with their new scheme of accounting, and to base it upon an inventory. By virtue of having started the inventory when we did, we were enabled to comply with the order of the Commission within three or four months after the date fixed by the Commission for compliance; if, on the other hand, the inventory had not been made until we were asked for it by them, we would not have been able to reopen our books until a year and a half, of more, after the date set by them.

The president of the company stated, in a communication to the shareholders, that a report by J. G. White & Co., including an inventory and appraisal, had been requested. It gives, probably, more clearly than I can state it now the purpose of the company at that time in having an appraisal and inventory made, and I would like to read from it:

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"Shortly after the decision in the rates cases, the board of directors of your company authorized the employment of J. G. White & Company, Engineers, to inventory and appraise all the property of your company; the property will be appraised as of its present value. We expect to receive the report of J. G. White & Company during the current month.

"In our report for the year ending December 31, 1908, we recommended to shareholders the adoption of the following policy:

"Complete publicity in all matters pertaining to water supply and accounts.

"The upholding of all constitutional rights.

"To meet the city authorities in an endeavor to lay a foundation to determine

"(a) A price for an immediate sale;

"(b) A price under different degrees of development;

"(c) An agreed price with agreed return plus cost of development under option to sell to city for a fixed period. And

“(d) A price for the sale of the distributing plant in San Francisco with a contract for the sale of water to the municipality.

“To allow the value of the property to be determined by submitting the question to a disinterested board of arbitrators under such terms as may be agreed upon.

“To develop the resources of the company and extend its field of operation.

“To maintain, improve, and extend the property and, if opportunity offers, to sell it at a fair and reasonable price.”

I read the quotation in order to indicate the general matters, which, among others, actuated the desire to have an inventory and appraisalment.

At the time the segregation of 60% to the condemnation suit, and 40% to the rate suits was made, the company was confronted with the two litigations. Practically all of the questions involved in the one litigation were common to the other. It was felt that more time and expense would necessarily be involved in the suit in condemnation than in the rate cases, and purely as a matter of judgment the pro-ration of the costs was finally put at 60% for the condemnation case, and 40% for the rate cases. At that time we didn't know which case would be undertaken first.

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Mr. Muhlnher: Referring to the general subject matter of the Washington item, where there are two subdivisions shown; one instead of being charged against the revenue of the company through operating expenses, was charged direct. In the case of 1908-09 it is not included in the operating expenses, although it does go toward a reduction of the net revenue. One is charged to operating expenses, and the other is from the surplus of the stockholders, in which case it would not be charged against the City as an operating account. Mr. Bailhache's elimination does not amount to a double deduction. He has simply taken out what was expended in later years; in other words, he ignored the expenditure of \$20,000 in 1908-09. Outside of Mr. Schussler's lectures, and the general publicity campaign, I don't think there were any charges.

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Mr. Eastman: What I had in mind was the change from the charge to surplus to operation. The issue that was brought was beyond the control of the company, and the company felt compelled to meet it. Among other things that tended to jeopardize the position of the company was the possibility of duplicating the city distributing system, which was a part of the plan the company had to meet, and in that way was regarded as one of the hazards of the business. We felt that we had not contributed to bring on the issue, and we had to fight it. As it was a hazard of the business, the subsequent charges were made to operating. There were issues raised. It was alleged that the city distributing system was inadequate, and also that the potential possibilities of the undeveloped resources were insufficient to meet the

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requirements of the city for a reasonable period of time; also the quality of the water was questioned. We felt we would have to meet these issues.

9351 The Washington expenses were viewed by the company as a matter of self-protection, and meeting the issues that the company felt were thrust upon it as to the duplication of the city system, the quality of the water, and the sufficiency of its undeveloped resources. The Army Board of Engineers, appointed by Secretary of the Interior, Ballinger, requested the company to furnish it with all the available information it had with respect to the developed resources, and as to the capacity for future development. The city was also asked to furnish information on these subjects. It was in that connection that the larger expenditures were made in the hearings following the investigations of the Army Board.

Questioned by Mr. Searls.

9352 This request from the Army Board came about when Secretary Ballinger was in office, and hearing was to be had. He finally decided that instead of having the hearing, he would have an investigation first, and he appointed the Army Board, consisting of three members, and they were given something like one or two years to report, and it was during that period we received that request, and made our returns to them. When they finally made their report, there was a hearing in Washington before Secretary of the Interior, Fischer, at which we did appear. We had not appeared before Secretary of the Interior Ballinger. My recollection is we did not make any appearance in Washington while Secretary Ballinger was in office. It was known at the time he was in office that the company was opposed to the Hetch-Hetchy grant.

DIRECT EXAMINATION BY MR. GREENE.

Referring to the fee of \$5,000 paid to Senator Spooner for advice in connection with the opinion in the Madera Waterworks vs. City of Madera case; the City of Madera at that time threatened to bring in water from outside sources, and to parallel the distributing system of the company in that city. Senator Spooner's opinion was sought as to whether the city had that right legally.

9353 The question comes up as to the method of making donations. I believe it was in the year 1908 or 1909 that the president of the company requested the Board of Supervisors to pass a resolution making it legal for the company to make contributions to charitable institutions, either using its own discretion in such contributions, or after approval by any committee the Board might name. The Board declined at that time to pass such a resolution. Prior to that charitable institutions had been helped out by the company in the way of charging partial rates. Some were not charged any bills at all, others half rates, and others quarter rates, as the case might be. It

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

was not felt that it was illegal to make the donations, but the company thought it was against the spirit of the law, in the nature of a rebate, charging a consumer a preferential rate. Since that denial the policy of the company has been to charge full rates to all consumers, but in case of charitable institutions to make cash donations; those cash donations are based on from a half to a quarter of the water rate paid by those consumers. The former contributions were in the form of lower rates for water, or free water, and in order to get away from that method of doing it, which we thought was subject to question, they have been made in cash since that time.

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We give to the Associated Charities. They have no institution that takes water, but we do not necessarily confine it to institutions that take water.

Referring to the subscription to the Panama-Pacific International Exposition; the motive of the company in making the subscription was that it felt that any corporation depending upon the inhabitants of the city for its subsistence should participate in a project of that sort; the company was not actuated in making the subscription in any thought that it would get the money back.

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CROSS EXAMINATION BY MR. SEARLS.

Questions of general policy may have their origin in one of the departments, in which event they would be reported to the manager's office, and either directly by the manager to the executive committee, or to the president, and by the president to the executive committee, or to the board of directors. Mr. Elliott, for instance, would report to me in any event as to a matter of policy, and I in turn would report to the president, who would report either directly to the board of directors, or through the executive committee to the board of directors.

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The president of the company is responsible for all of the activities of the company, and in connection with that responsibility is in direct touch with the management of the company, and through the management with all of the departments of the company. The president is largely responsible for the company's policy; he makes recommendations to the directors and the executive committee, and from their conclusions come the various policies of the company. The president devotes a great deal of his time to matters of policy; not only that, the president of the company takes an active interest in the properties of the company, and spends a good deal of his time on them.

I would hold myself responsible for any details conducted by departments which might be taken up singly or in groups; with reference to consumers, they are generally taken up in groups, necessarily. I am pretty much in touch with all the details of both the operating and the construction departments.

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The questions of whether extensions shall be made, new property purchased, new water supply developed, or some new policy with re-

9358 spect to the future be followed, constitute some of the most important problems, but it can be hardly said that that would relieve any of the responsibility or importance of what apparently seem to be questions of lesser importance. After a policy is determined upon, it is not worth very much unless it is carried out specifically as intended when it was formulated. In other words, the executive of a company, in my experience, cannot feel himself relieved of a subject matter because the policy has been definitely settled; it is probably the least part of his labor when he announces to the department that is to execute it just what the policy is. It is infinitely harder in my experience to have the policy carried out than it is to delegate or inform the one who is to carry it out just what it is.

9359 The question of the future development of the company's sources have been more or less under consideration for the last six years, and the question of whether we would go on with our development at Ravenswood, or do further pumping at Pleasanton, or build a concrete dam at Calaveras, and so on, are all very important questions, and require time for consideration. It has been my experience that the general determination of a policy is one that has to fit the conditions existing at that time; for instance, at the time of the installation of the Ravenswood plant, it was the desire of the company to go further than that, but it felt at the time that that was the best it could do under the peculiar circumstances existing just then. While those general questions take time to decide, the final decision may be on a subject of far less importance than the one to which the officers first addressed themselves. They have to consider all these things, and they did, for instance, at that time, and by the installation of a temporary plant at Ravenswood the questions then considered are deferred to a certain time in the future; assistance is called in, and engineering advice is given on these questions. The final disposition always depends upon later advice and later consideration upon those subjects. I think it could hardly be said that the officers of the company continually devote a large portion of their time to those matters.

9360 For instance, it is decided to construct the dam at Calaveras, and that policy is decided upon after conference with our engineers after thorough examination of the features of the plant. It was a desire of the company to build that dam ever since about 1905. Bids and contracts were called for, and were to be returnable to the company the day of the earthquake; operations were then deferred, and it was taken up again in 1909 and the actual operation on the present structure commenced in July, 1913. The problem was before the executive officers of the company between 1909 and July, 1913, but I could not say that that necessitated their giving continuous and constant time to it. I would say that the time of the officers to that question would be incidental to it; other people in advising the company—engineers—

would devote constant time to it. I should think a fair disposition of it would be to say that the officers of the company spend their time in a more incidental way. That is, incidental to the general routine and responsibilities. The decision as to what type of dam should finally be adopted rested with the officers of the company, and the success of the project would depend on their making a proper decision on the advice before them.

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At the time of the acquisition of the larger holdings of land at Pleasanton, there was litigation talked of, but I don't recall any litigation that we might call threatening prior to that time. There were suits pending when the first group of land was purchased north of the company's 900 acre holding; that is the holdings of the Lilienthals, the Pleasanton Hop Co., and the Alameda Sugar Co. The question of whether to acquire those lands in settlement of litigation, or to condemn the right to take water from those lands, or possibly to abandon the development of that project for the time being, and develop some other project, would be up to the officers and the executive committee of the company. That decision would have to be made by them.

As to whether this original estimated segregation of 60% of the expenses to the condemnation suit, and 40% to the rate suits, is throwing too much of the expense on the condemnation suit, would seem to me to depend on so many factors that we do not know now, that it would be impossible to say whether that were true or not. A great deal of the data in this litigation might be used in the condemnation suit, but that, I take it, would be determined on whether it was agreeable to the parties to the suit which could not be settled at that time. If the condemnation suit were expeditiously handled, it would cost relatively little. On the other hand, it seems to me it might well be that it would be a very long drawn out litigation, in which case it might cost twice as much as it otherwise would. It would be in the future, but in the absence of any knowledge on that subject, I am sure I could not offer any estimate of the relative magnitude of those ratios.

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Senator Spooner was not in the United States Senate at the time his bill was presented. My impression was that the company abandoned its opposition to the Hetch-Hetchy project before 1913. I thought it was just about the time that Secretary Fischer was going out of office. The withdrawal of the opposition was in the spring of the year 1913; it may have been after the Democratic administration went in, but it was about that time.

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RE-DIRECT EXAMINATION BY MR. GREENE.

The withdrawal of the opposition had nothing to do with whether it was a Democratic or Republican administration. The chairman of the Water Rates Committee of the Board of Supervisors of San Francisco stated to the president of the company that the company could

rely upon it for fair treatment, and he further said that if the company would make any substantial move to meet the city half way, that he would be personally responsible that his committee and the Board of Supervisors would go more than half way to meet the company; in that connection the withdrawal of opposition was made by the president of the company.

9367 I am sure that there have been no cases where any officials' salaries have been increased on account of new construction work, except the head of the engineering department. The construction during that time has ranged from something over \$100,000 to something over \$2,000,000, and in that is included acquisition of lands.

ONE HUNDRED AND TWENTY-EIGHTH HEARING.

MARCH 31, 1916.

Witnesses: F. L. LIPMAN for Plaintiff.
GEO. K. WEEKS for Plaintiff.
GEO. TOURNY for Plaintiff.

9370 Mr. Bailhache: This table shows the depreciation and obsolescence account, the fund being credited with certain sums of money, and charged with certain properties that were abandoned and dismantled and put out of use. This contains all the items shown on the Spring Valley ledger as a charge against their depreciation reserves. On the second page I have segregated the amount of replacements made after the fire in the nature of rehabilitation made under a separate total. That amount of \$611,336.31 was originally called on account to be paid for out of the stock assessments, of which \$840,000 was raised, and subsequently it is charged in against replacements. I understand that Mr. Sharon would add to the original cost in the year 1907-08, and along in there, a large amount of rehabilitation as new improvements; I think it amounts to about \$300,000. The third and
9371 fourth pages of this exhibit bring the statement down to December, 1915, which was to show the condition of the fund at the end of the year 1915. I don't think that those items which were charged in in December were put out of use during the last half of the calendar year. The Spring Valley's system seems to be to charge up at the end of the year the total items going into depreciation covering the whole year.

(This tabulation, showing the character of the charges made by the company against this depreciation reserve, was introduced and
9372 marked "Defendant's Exhibit 177".)

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

Witness: F. L. LIPMAN for Plaintiff.

DIRECT EXAMINATION BY MR. GREENE.

I am 50 years of age, reside in Berkeley, California, and am vice-president of the Wells-Fargo-Nevada National Bank. I have been in the Wells-Fargo-Nevada National Bank since May, 1883, and for the last 23 years I have been an official of the bank; for nearly 10 years I have been vice-president. It is my business to consider the rates of return, and interest rates upon various loans. I have had occasion to consider the difficulties and hazards, and other characteristics of private corporations, and public service corporations, from the financial point of view. I have written a report upon the fair rate of return upon the capital invested in a public service enterprise, as follows:

9373 INTEREST RATES IN RELATION TO THE COST OF CAPITAL FOR PUBLIC UTILITIES.

1. It is often assumed that at any given time and place there is some rate of interest, which applicable to various transactions as they present themselves, is the current rate. This is far from the fact; the current rate of interest is not *one* but many. For example, in San Francisco today the rate current:

For bankers' balances, payable on demand, is.....	2%
For balances subject to notice	2½ to 3%
For commercial paper	3½%
For State of California bonds.....	3:90%
For savings banks deposits	4%
For bank loans on time	4%
For gilt edge railroad bonds, about.....	4¼%
For California county bonds	4:15 to 4:25%
For city bonds	4:25 to 4:40%
For corporation bonds	4½ to 5¼%
For bank commercial loans	5 to 6%
For mortgage loans on city property	5½ to 6%
For mortgage loans on country property.....	6 to 7%
For return on capital invested in the stock of estab- lished corporate enterprises, a great variety of rates, say from	4 to 10%
but generally running at from	6 to 8%
The cases of higher or lower rates being susceptible of special explanation.	

All these rates are completely, and in all respects thoroughly, normal in their respective field, the influence of rates in one field over those in another being comparatively small and negligible. (But basic changes in general conditions may affect all the rates, upwards or downwards, without, however, greatly altering their inter-relations. Thus under the influence of these general causes, the course of rates just now happens to be low,—low as compared with the average of other years.)

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The fact is, there are many money markets in any one place, at any point of time, each having its own supply and demand. The business man investing for profit would not be satisfied with the return on sound bonds, although this class of investment alone may be the proper outlet for the funds of widows, orphans and estates. The country bank balances earning 2% cannot properly be used for the purchase of corporation stocks earning 8%, while the corporations, on their part, are unable to attract investment funds at 2%.

The main reason for these differences in rate is risk. "The greater the security, the lower the rate", is a commonplace, but there are many

risks other than that of eventual loss. Indeed, in all the investments for which a market rate exists safety would be a prime requisite, whether at 2%, or 8%, or at any place between, all quotations being for investments considered safe each in its class. There is no market rate quotation for unsafe investments.

The risks more commonly affecting market quotations, and indeed producing the classification of these quotations, are: risks of delay, risks of uncertainty, risks of inconvertibility.

(a) The risk of delay is instanced in the case of mortgage loans. The bank, or individual, investing his money therein puts it practically beyond his control. He can get his money back usually when the mortgagor is ready to pay. Hence a higher rate. Another instance of this risk is in the case of corporate securities, where the corporation will require a period of time, perhaps indefinite, before reaching the point where it can operate with profit. The Federal Reserve Banks are an illustration of this. They are undoubtedly bound to attain the position where they can earn the 6% dividend allowed by law but they did not do so in their first year, and no one knows how soon they will. If their stock were bought and sold in the market this delay in reaching the point of profit would be reflected in the price and therefore in the rate yielded.

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(b) The risks of uncertainty are various. They are often the risks which constitute the reason for a difference in income return between the bonds and the stocks of the same corporation. So also with the uncertainty of the security of a public utility, where even if the company has shown satisfactory results in the past, its conditions of operating are largely under public control, and to that extent, out of the hands of its owners. This risk of uncertainty will cause the investor to demand a higher rate of return. The character of the company's assets will sometimes affect this question. If they consist largely of salable commodities, such as staple merchandise, for instance, the company could dispose of such assets and so release the capital invested with the result of paying back the investor in case conditions should become unfavorable for the continued profit of the company, and thus the risk would be minimized. So also with assets consisting of valuable real estate, which could be relied upon, if necessary, as an alternative to successful operation. But obviously such real estate must be such as would have an alternative use and therefore an alternative market. Evidently, coal bearing lands of coal mining company could not be relied upon if the coal industry should, for any reason, become unprofitable; and, similarly, the water bearing lands of a water company (where such lands were required for the community's water supply) could not be devoted to any lower use or be marketed for such use if, through public control or other conditions, the water enterprise itself should cease to pay adequate returns upon the capital invested.

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(c) The risk of inconvertibility affects the cost of capital perhaps more directly than any other influence, because, compared with other risks, a greater number of degrees of convertibility are admissible in the investment market and therefore convertibility is more often evaluated and thus reflected in the rate. In the market quotations enumerated the chief distinction between the rates is based upon distinctions of convertibility. Of these, the bankers' balances bearing 2% are ideally liquid. The owner of the balances can draw them at will, so that they are almost as readily accessible as though already in his own possession. They therefore bear 2% interest and would often go to a lower figure were it not that this rate has become conventionalized. The bankers' balances subject to notice, however, will bear $2\frac{1}{2}$ to 3%, a higher rate because the notice required makes them slightly less convertible.

9377 Similarly we find commercial paper yielding $3\frac{1}{2}$ %, State of California bonds 3:9%, prime railroad bonds $4\frac{1}{4}$ %, differences due chiefly to the measure of convertibility. The bonds, as a rule, are readily salable in the market, but market conditions might exist wherein they could not be disposed of except at a sacrifice. On the other hand, commercial paper is certain of repayment at an early maturity and in the meantime is rediscountable through the Federal Reserve system; it therefore becomes the most highly convertible item in this group and returns the lowest rate of interest. The comparison could be extended through the various categories of investment.

We sum up under this head that any time and place there are a variety of rates current for loans and investments; that these rates vary greatly, the difference being fundamentally due to differences in risks; risks of loss, risks of delay, risks of uncertainty, and risks of inconvertibility.

9378 2. Aside from the special conditions which determine these several rates of interest there are certain general influences which, through periods of time, affect interest rates as a whole. During the panic of 1893 and that of 1907 and also after war broke out in Europe in 1914, there was a condition of severe stringency affecting interest rates in all classes. Some rates, however, were affected more than others. Commercial paper, now about $3\frac{1}{2}$ %, was, in 1914, quoted at from 7% to 10%. State and other gilt edge bonds, now 3:90% to say $4\frac{1}{2}$ %, were difficult of sale at 5% or even 6% and upwards. Loans on mortgages were practically unobtainable at any rate and fresh capital for new enterprises was absolutely unobtainable. The full effect of those conditions was felt for a comparatively short time, say two to four months, but their influence lasted much longer, being a considerable factor in the investment situation for a protracted period. Indeed, since such periods of stringency are likely to come again and may recur suddenly without much warning, their possibility becomes an ever present fac-

tor in the money markets. While these crises are in progress the demand for money is insatiable, it being then practically impossible for any one to dispose of his investments or otherwise to obtain any use of the funds locked up therein. These considerations must have a strong influence on the mind of the intelligent investor even during times when the money market chances to be easy. During periods of stringency we might infer that new enterprise would never be able to obtain capital on any terms but, obviously, such situations are only occasional and in a sense, abnormal. But as it is, so to speak, normal for these abnormal periods to recur, this fact must be taken into account by the investor whose attitude cannot be based solely upon the conditions of an easy money market. The fact stands out that the interest rate required to attract the investor must be sufficient at least to meet the average situation.

Furthermore, through longer periods of time there are fluctuations of the interest rate still more fundamental. From 1894 to 1897 rates had become very low and they remained low. Many people then inferred that rates were tending downward through the force of some economic law, perhaps towards the vanishing point. The great life insurance companies, for instance, felt it necessary at that time to lower the basis of their actuarial calculations. But beginning in 1897, interest rates ran in the other direction, making steady increases which soon upset the fine theories of the nineties. This upward movement continued for nearly ten years, culminating in the panic of 1907, from which time investment capital remained scarce and the rates high until the opening of the European war. Thus, this high level was maintained from about 1905 to 1914. Since the war began business conditions have been so upset that it is quite impossible to distinguish between what is normal and what is exceptional. Looking forward from the present, there is the widest disparity in the views of experts as to the course of interest rates in the immediate future, although it is generally believed that, in the long run, the enormous destruction of capital through war will tend to force rates upward, under the well established laws of supply and demand. Be this as it may, the point we are emphasizing here is the fluctuation of rates through periods of time, and that these fluctuations are of importance sufficient to affect the mind and the policy of the intelligent investor. (See 9381.)

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3. We all know that rates vary from place to place. Money in New York may be worth 3%, in London 5%, in the Argentine 8%, and in the Strait Settlements 10%, all on the same day. Similarly, a considerable disparity may exist in rates between those current in New York, Denver, Dallas, Seattle and San Francisco. A newer, or less settled, country has a smaller fund of saved capital and a greater relative need for development through fixed improvements and the like. We have called upon European capital to build up the United States

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and our progress would manifestly have been restricted if this country had had to depend upon its own locally saved capital. In the United States, the West has called upon the East. We are confronted by the question, what is to be the influence on the industries of this country of the unprecedented destruction of capital in Europe through war. Europe will not be able to continue supplying capital to the new world; on the contrary, it will be in the market for our capital and will be inclined to bid a price sufficiently high to obtain it. This European demand for American capital will be effective chiefly in the older settled parts of the United States where saved capital is relatively abundant. This demand at high rates on capital in the Eastern part of the United States will deflect that capital to a certain extent from use in other parts of the United States, including use in California. The reduction thus resulting in the supply of capital for our industries will have a material effect upon our own money market, tending to disarrange the relation between supply and demand, to hold back some of our improvements for lack of capital, and to make our enterprises pay more highly for their money. We have seen this influence at work heretofore. From 1907 to 1914, capital for permanent investment has frequently been so scarce in New York and in the other Eastern markets, that our California corporations have had to bid very high rates to obtain supplies for use here, instances being known where the cost was upwards of 10%. The emphasis here is upon the disparity between rates existing in different places, especially between an old established community and a new one, and the influence the rates of one place may exert upon those at another.

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While on this subject of the changes occurring in interest conditions through periods of time we may mention the conflagration in San Francisco and the profound influence it had on our rates. Prior to that catastrophe San Francisco was so largely the owner of investment capital that it financed practically all its own undertakings at rates more favorable than could have been obtained elsewhere, and had surplus to lend all up and down the Coast. Our financial institutions were accustomed to invest largely in mortgages in Los Angeles, Portland, Puget Sound and Spokane. The conflagration with its loss of several hundred million dollars in excess of the insurance recovery changed all that, however. Since 1906 the diminished capital in San Francisco has furnished no surplus for permanent investment or real estate mortgage in other Coast cities; there has not been even enough for our own use, our property owners and corporations having, to a considerable extent, been obliged to look to Eastern sources for loans, at higher rates of interest. Naturally this condition here tends, and will tend, to be modified as new capital accumulates.

4. We may now consider what is required on the part of a business enterprise to obtain capital funds, from the viewpoint of the

money markets. All the factors already mentioned will naturally have their influence. The investor can put his money into State bonds at 3:90%; he can deposit it in the Savings Bank at 4%; he can buy other public securities at $4\frac{1}{4}$ to $4\frac{1}{2}\%$; or invest in standard corporate bonds at $4\frac{1}{2}$ to $5\frac{1}{4}\%$. If he is in a position to take a certain amount of speculative chance he can buy corportion stocks returning him, say 6% to 8%. What rate then must be offered him by a new enterprise in order to attract his funds? He will bear in mind that the new enterprise involves a higher degree of uncertainty, a condition commonly met by an opportunity perhaps for speculative profits in case of marked success. In any community, old enough to have accumulated a considerable mass of saved capital a certain part of that capital will be so owned as to be interested in the speculative outlook of a new enterprise, and it is from this source that the promoters of the enterprise must look for their capital funds. The question, "what rate of interest will attract capital for a new enterprise" therefore involves the fallacious assumption that it is some rate of interest, that is, some normal or usual rate, which attracts capital for such an enterprise. In fact it is not a rate of interest but an opportunity for a speculative profit, and this must be so, for the new undertaking will inherently be subject to changes of loss or non-success, and the possible risk can be offset only by the consideration of a possible profit. In the case of the utilities it is sought to place them where they can obtain capital on the basis of some rate of interest; the idea being apparently that public inspection and regulation, while eliminating opportunities of profit, will sufficiently stabilize the new industry so as to make it promise a reliable return resembling that of an established enterprise. Whether this can be accomplished may depend upon the particular circumstances of each case, but it would seem doubtful if new enterprises or new extensions could ever be divested of the risk of failure, partial or complete. Now the largest source of investment funds, is estates, widows, orphans, trustees, and similar holders of accumulated funds, and these, being impressed with the character of trust funds, necessarily seek investments which are altogether safe, sound, seasoned and marketable. Such funds can be satisfied only with the best of bonds, mortgages, and the like. They are not at all available, and should not be, for capital issues of a new enterprise. For this latter purpose the funds properly to be sought are surplus amounts in the hands of owners, living men, who, with other means and personal earning capacity, feel that they can afford to take the risk of investing in a new enterprise. And such supplies are comparatively restricted. Men of this class are usually competent and shrewd, able to weigh with some intelligence the prospects and risks. I am trying to say that it is these relatively competent men from whom capital must be sought for new enterprises. It must

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be admitted that formerly a considerable part of the capital for such purposes was derived from the widows and orphans, the small saver, and similar people of restricted business experience. This was accomplished through the persuasive salesmanship of promoters and others, who, having perhaps some underlying faith in the outcome of the enterprise nevertheless were governed by an imperfect sense of responsibility in connection with the solicitation of savings and trust funds the owners and guardians of which ought properly to have been considered exempt from being tempted to speculate, or from having the speculative side of the investment glossed over. Instead they should have profited by sound advice to confine the use of their funds to investments fully seasoned and sound. But recent history has done much to teach the uninstructed public something of the hazards that they have no right to assume. Here, in California, the experience of the Western Pacific and the Natomas, and other enterprises which were aiming after objects economically worthy and sound per se has brought home to the public a realization of the inherent hazards of a new enterprise, as a new enterprise, much the same as the experience of the California Safe Deposit and Trust Company has warned the public against banks offering too high a rate of interest. For the present, therefore, the reservoirs of capital to be tapped for new enterprise are confined substantially to the classes of funds which are economically justified in assuming the hazards of new enterprises, namely, the surplus funds of the well-to-do, of the active, successful business man. The point to be emphasized here is that this kind of investor is relatively competent and will tend to be accurate in judgment as to what risks he can afford to take and what inducements of profit should be sufficient to attract his funds. This inducement will consist in an opportunity of profit exceeding the normal interest rate on sound investment. In other words, the inducement must be made up of two factors; the ordinary interest rate plus a profit or additional rate.

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Now going back to the list of current rates, we find that established enterprises offering themselves to the business man for his investment range from about 4% for liquid funds, practically recallable under all ordinary conditions of the money market, to corporation bonds returning the investor up to 5% and also reasonably convertible through the bond market, to the capital stock of an established corporate enterprise returning say from 6% to 7%. It is evident that it is this last named class which will compete most closely for the investment funds of the business man, and so it might be worth while to see what are the actual rates obtainable.

ALASKA PACKERS ASSOCIATION is paying 6% upon the investment and it is understood that the Company is earning sufficient surplus above its dividend rate reasonably to insure the continuance of that rate.

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

THE ASSOCIATED OIL COMPANY is paying just under 6% on the market price but, in common with other oil stocks, is understood to furnish certain speculative opportunities of profit.

THE SUGAR STOCKS are paying from 6% to upwards of 10%.
BANK STOCKS are paying from 5% to 6%.

These various lines of business have each their particular opportunities and hazards. They are all dependent, as one factor, and more or less largely, upon continued good management, a consideration on which the business man can form some sort of a judgment. Speaking generally they exist under the conditions of ordinary business competition and development through which, and in spite of which, they have reached their dividend earning position. It seems clear that with such opportunities of investment open, no new enterprise could expect to obtain funds unless it offered some inducement beyond such rates. How much more than 6% would have to be offered would naturally depend upon circumstances, but it is safe to say that the rate would have to be at least 7%, and in many cases more. These theoretical considerations are enforced by practical observation and experience. Business men come to their banker, from time to time, to discuss these questions and I can testify that I have found this to be in fact their attitude.

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Take the case of a new public utility required to raise \$10,000,000 capital for expenditures on its plant and business equipment: Naturally, it would seek to raise a certain part of this capital on first mortgage bonds. If it could earn 7% on this \$10,000,000 capital it would have net earnings of \$700,000 per annum. If such earnings could be safely counted upon it might raise \$6,000,000 of its capital on 5% bonds, the remaining \$4,000,000 on capital stock to which it could offer the expectation of dividends at 7%.

The bond interest on \$6,000,000 at 5%	
would consume	\$300,000
The dividends on stock \$4,000,000 at 7%	
would require.....	280,000
Total	\$580,000
Out of this income of.....	700,000
leaving a surplus of.....	120,000

indispensably necessary for eventualities, unforeseen expenditures, etc., and to equalize dividends during periods of lean business. The point of this illustration is not that it is precisely the modus operandi of raising capital for such an enterprise but that we can take it as an example of the minimum returns that would have to be offered, and reasonably expected, in order to induce the investment of capital. But as a matter of fact the 7% earnings must be, more or less, con-

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jectural. Even if we assume that theories of rate regulation would today permit the 7% earnings, there is no certainty, from the investor's point of view, that some later rate-fixing body might not have a different notion and reduce these returns so as to cut down the income. Furthermore, there is no guaranty on the part of the State that the corporation as an economic enterprise can sell its commodities and services so as to earn the 7%. History has many instances of the bankruptcy and reorganization of properties whose returns were thus overestimated, and the hardheaded business man in the case such as outlined would have to be pretty thoroughly convinced that the corporation could and would do as well as the estimates before parting with his money for a 7% return.

5. The rates required to induce capital to invest in the cost of new extensions of established enterprises, although differing apparently in some respects from the brand new enterprise, it seems to me must be judged on the same general principle. If the enterprise, through regulation or otherwise, has been unable to accumulate any substantial surplus, new capital for extensions is in much the same position as original capital would be, with perhaps the advantage of some additional data on which to forecast the probable profitableness of the new extensions. If, on the other hand, this established enterprise has accumulated surplus which tends to safeguard the returns on the additional capital regardless more or less of the profitableness of the new extensions, it is possible to conceive of such risk being partly or wholly eliminated. But then the question economically considered would not be exactly that of calling for new capital but of liquifying or transforming old capital left in the business. It is to be expected that if rates and other conditions of operating are to be fixed by the public and are to be placed at the lowest point possible that the instances will become fewer and fewer where companies will be allowed to accumulate any substantial surplus. Indeed, I suppose that where such instances exist today they are mostly those of companies dating back from former years into a time when capital invested in public utilities was allowed to make a profit commensurate with that of other enterprises; where the risks—initial and other—were compensated by opportunities of profit and where past managements prudently left accruing surpluses in the business to strengthen it in future years and to insure its progress.

I conclude therefore by expressing the opinion that even under the most favorable conditions, in order to attract capital for its needs, a public utility operating or to operate in this vicinity must be allowed at least seven percent; that this applies even to a water company whose property consists largely of water bearing lands; that it applies, and applied, to the period from 1907 to 1914. I must add, however, from the viewpoint of the money markets that I am by no means sure that 7% would be sufficient for this purpose.

CROSS EXAMINATION BY MR. SEARLS.

In stating that the rate of return on capital invested in the stock of established corporate enterprises covered a great variety of rates from 4 to 10%, I had specific enterprises in mind. I could hardly give you from memory an example of the enterprises which bear these different rates of interest. I have given the instance of the Alaska Packers Association, which sells at par, and pays 6% dividends; the Associated Oil Company pays 4% on par \$100, and is selling now at about \$67 or \$68. The various bank stocks in San Francisco generally range from 5% to approximately 6%. The sugar stocks run to quite high rates at certain times. The statements which I have made on the first page of my memoranda are absolutely accurate; those figures are taken actually from daily experience.

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I went over the stock exchange list; I tried to take each corporation there, and the rate of return that is made. I found that that was the variation, some were as low as 4%, some of them exceeded 10%. I considered that where the rates varied much, from 6 to 8, there was some special explanation, some reason for it paying less than 6, or more than 8.

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If the enterprise were an established enterprise that needed \$10,000,000 of new capital, the estimated income ought to be in excess of twice the amount required to pay the interest on the bonds. In the illustration I have supposed that the net income would be \$700,000. It is from that net income you decide how much bonds could be issued, because the amount of interest required on the bonds would have to be less than one-half of that \$700,000; I therefore concluded, roughly, of course, that \$6,000,000 at 5%, consuming \$300,000 per annum for interest return, would be permissible in the case of a corporation that had reason to expect it could earn \$700,000 net. The bonds would not sell readily, in my judgment, if the interest required to support those bonds exceeded, we will say, one-half of the net income of the corporation. If you had \$7,000,000 in bonds, and \$3,000,000 in stock, and the bonds bore 5% interest, I would not prefer to buy such bonds. I would consider that that bonding was a little too full. I would say that those bonds would not sell at par as readily as if the bond capitalization was only \$6,000,000, and the interest on the bonds was \$300,000; in other words, I would not consider them quite sufficiently safeguarded.

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If this were an established corporation where the bulk of its holdings was in real estate which had appreciated in value since the original investment, that would have an effect on the proportion of the bonds which might be issued in acquiring new capital, because then the security of the bonds would relate to these valuable properties, and not particularly to the new extension. The investor

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might not even inquire what the company was going to do with the new capital if it had sufficient in its old establishment to make the bonds good anyway. The investor would not care about the new income, if there was an old income sufficient to make the bonds good.

9392 Assuming \$20,000,000 appraised value of the real estate, and about \$20,000,000 of structures, or a total appraised valuation of \$40,000,000, the question is that the company wants to raise more capital; it would be rather difficult to say offhand what proportion it can take in bonds. One could state, I think, the general principle on which it could be determined, but so far as the real estate has an alternative value, and that is to say, is not a water producing property, or required for water, why, of course, it has its own value; the investor would want to know what that value is.

9393 The investor, so far as any property necessarily connected with a water enterprise, whether it is land or structures—I don't know the technical terms, but whatever it is, he would only consider that in terms of income; if the income were sufficient to safeguard that, it would safeguard his debt. The only property he would consider as property would be property the company owned which was not required in the water business, but would be an outside security for his investment. Now, if a person had all those facts, he might determine just how that thing could be done. I am sure that on the mere enumeration of assets and liabilities it would be impossible to say how far that property could go into debt to the satisfaction of the creditor, so that the creditor would be ready to put in his money—to become a creditor.

9394 Assuming that the structures of the company would produce very little, and the real estate would produce the value that has been given it; then you have \$20,000,000 of real estate which would produce \$20,000,000 as against the \$17,000,000 bonds; I should say that outside of the water enterprise, the company is in a pretty bad shape from an investor's point of view; he would have very little margin; in other words, if it were not for the alternative proposition, he has a water company, a going concern that produces an income and pays the coupons on his bonds, but if for any reason they had to stop, if the income stopped, and they could not operate, they would only have \$20,000,000 to sell off to pay \$17,000,000 of debts. His margin would be very small if there was any likelihood of that occurring. I take it, though, that that is rather an absurd proposition.

My estimate of 7% is based on money for a new enterprise. I tried to make a differentiation in the latter part of my paper between a company starting out in business, and a company that has an established business, and which is going to make extensions. I have not differentiated in the rate. What I am trying to do is to show the application of what seems to be the same principle. The paragraph

numbered 5 is intended to cover that; it is near the end of the paper. I say: "The rates required to induce capital to invest in the cost of new extensions of established enterprises, although differing apparently in some respects from the brand new enterprise, it seems to me must be judged on the same general principles. If the enterprise, through regulation or otherwise, has been unable to accumulate any substantial surplus, new capital for extensions is in much the same position as original capital would be, with perhaps the advantage of some additional data on which to forecast the probable profitableness of new extensions."

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I have given instances of railroad bonds yielding $4\frac{1}{4}\%$ to the investor, but that is not the rate which they yield to the company; the rates are various. That includes New York Central $3\frac{1}{2}\%$; it includes Union Pacific 4's; it includes various issues, the market price adjusting itself in the case of these under-lying gilt-edged issues, it adjusts itself to what is the underlying rate of interest today, $4\frac{1}{4}\%$, with shades of difference, perhaps 4.20 or 4.18. I should say from that a railroad bond could not be issued so that the money would cost the railroad $4\frac{1}{4}\%$, unless there was some railroad in the position of having vast surpluses, and a small debt, which might make a new loan at a very low rate of interest. These are for under-lying bonds. In the case of the great railroad systems there are plenty of over-lying bonds at higher rates of interest. Any new bond would come out at a rate considerably higher than that, and besides that, there would be all the expenses of putting it on the market.

There would be, from an investor's standpoint a considerable difference between a railroad borrowing money, and a water company; a railroad has made its position through a good deal of regulation and competition, and a good deal of the infantile troubles of an enterprise. A water company is a public utility where they are simply blocking out the relation between the water company as a private enterprise and the public, and an investor would, by all means, on the same basis, rather have a railroad bond; therefore, the water company would have to pay a higher interest.

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The Spring Valley Water Co. borrowed at a nominal rate of 6%, I think, at first, in the past few years, and $5\frac{1}{2}\%$ in the second case, but there were certain expenses besides that which added to the cost to them. I think today they could borrow at less than that for a temporary short loan. If those loans cost them over 6%, I should say they could probably borrow for less than 5% now on a temporary loan. It is some finance for a company during a period of depression to borrow its money on short-term paper, and wait until the money market is more favorable for the issuance of long-term securities in that it is a matter of necessity; the company has to have funds, and it cannot get them on long-term loans in periods of depression, when the public will not take long-term loans. I

9397 don't think any company, East or West, deliberately puts out short-term paper, except under necessity. There have been periods when it is impossible to sell a bond at any reasonable price. After that period, which I would not be inclined to say was of short duration, it is possible to sell bonds. We had a period from the panic in 1907 to the opening of the European war, when, for the greater part of the time, the money markets were so that a corporation could not favorably market its long-term bonds, a period of 6 or 7 years.

The Natomas was floated during that period. I don't agree with you that if it had not been for the European war that it is by no means certain that the Natomas would have come to grief.

I have a knowledge of the rates that are being obtained in San Francisco for mortgage loans, and I have given you from $5\frac{1}{2}$ to 6%. In the period from 1907 to 1913 they were higher than that. I think there were years there when there were practically no loans for less than 6%.

9398 Referring to the table which you have there, showing the rates, as follows: Los Angeles Gas & Electric 5.38; San Diego Consolidated Gas 5.34; Southern California Edison 5.56; San Joaquin Light & Power 5.80; those quotations show that the rates paid by these public utilities are considerably higher than these corporations bonds that I have quoted. These utilities, I should say, did not have the same breadth of market. The conditions surrounding all utilities have been such during this period of change that the public has not been quite as ready to invest its money, and it has required a higher return. The corporations bonds I have quoted here, from $4\frac{1}{2}$ % to $5\frac{1}{4}$ %, are mainly local railroad bonds, and other bonds of standing that are readily bought and sold in the market. If you make a comparison between the Los Angeles railroad underlying bonds, and the Los Angeles gas, you will find that the railroad borrows more cheaply than the gas company. You would find the investor would pay more for the railroad bonds bearing the same rate of interest than the gas bonds. The railway bonds sell at a lower rate to the investor than bonds of some other utilities.

9400 I think that widows and orphans should not invest in new enterprises. There are utility bonds that are perfectly good for any trust fund today. I would consider the Spring Valley bonds a good investment for a trust fund, but the stock I should not. The stock has been selling for above 50% for a considerable time past. I should not consider it a good investment, no matter what it paid, for widows and orphans, because if it yields so much today, we don't know how much it is going to yield tomorrow. I am speaking purely from the standpoint of the investor. There may be some other theory of rate regulation that would govern tomorrow. I should say to the widows and orphans who came to me, don't you touch that stock.

I don't incline to the opinion that public utilities are liable to be put out of business by the Railroad Commission at any time. I am basing it on this opinion, that all this matter of the relation between the public utilities and the public is still being settled. I believe that there are a great many earnest men with different points of view trying to work this out. The under-lying bonds of a great many of these utilities—and Spring Valley is one instance—are perfectly good, there is plenty of security behind them good enough for trust funds, but the stock is not. I should not think, under such circumstances, such stocks ever would become the proper kind of investment for widows and orphans.

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The New York, New Haven & Hartford stock is a very good illustration; there is a stock that was considered so standard for many years that the money of widows and orphans, and trust funds of various kinds, was put into that stock, selling at \$200, and figures above that; one of these days they find there has been a rotten administration, that they have lost money, that they overbought, that they have committed crimes, and one thing and another, and the stock sinks to a level of about \$30, with a great deal of ruin in its train. That is a fair illustration why the widow and the orphan ought to keep out of these stocks.

If there had been the kind of a public utility commission that could properly have regulated that industry, that would not have happened, I think; in the meanwhile, though, there are certain hazards. The logical effect of certain regulation ought to be to stabilize certain securities and make them safe; it ought to be, if we work on the hypothesis that they are reasonably invested, and that they will pay an adequate return on the capital, whatever that adequate return is! if that is to be done, I should say that regulation ought to help. I am speaking of one having an opinion from the money market point of view that such regulation is in the right direction, and is a good thing. What I mean is that the whole theory of the regulation of utilities is not such, and being unsettled, there is an amount of uncertainty as to the way it will work itself out. It would seem as though the commissions and other bodies having these things in charge are seeking the light, seeking the best way to do things all around. That certainly is an influence which will tend to stabilize in the future.

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RE-DIRECT EXAMINATION BY MR. GREENE.

I was stating a fact, as a banker, that the Spring Valley Water Co. today could borrow money on short-term loans for less than 5%. Now, the reason that they could do it is that regardless of how they use the money, regardless of whether they are putting in an extension, the company's values and surpluses, from the standpoint of a creditor, are absolutely so sound as to make it sure they will

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carry out their agreement. That makes it a low-rate loan. In addition there is a plethora of money for a short-time use, and that is what causes the low level of the money market.

Questioned by Mr. Searls

If they borrow money for a short-time use, they might carry themselves over to the point where the rates for long-time loans will be stabilized, and returned to the lower level, but if they are going to borrow money for short-time use, and at a low rate, it involves the question of a plethora of money for a short-time use, which causes the low level of the money market; in other words, we then have a condition where the money market is plethoric. That is why anybody can borrow at a low rate. They won't need to carry themselves over in such a case to some future time where they could more readily place a long-term bond; in other words, there would be no place to bridge, there had already been a low money market. The theory of the short-term loans has been to carry the corporation over from a tight money market to an easy money market. When you are talking about a short-term loan at a low rate, you are assuming what is now the fact, that is already existing an easy money market at the moment. Whether they could get money at a low rate for long-term bonds depends on various circumstances; I should say that relative to what they could have done a few years ago, the rates are lower now than they were say five years ago.

9404 I have here the monthly report of the Stock and Bond Exchange of February 29, 1916, showing the prices at the close of business on that date, and the rates of return of various stocks. Here is the Anglo-California Trust Co., 105 bid, 110 asked, the last sale at 107½. At 107, 6% return would bring, net, 5.7. The Bank of California 190½ bid, last sale at about 191, paying 2¼% dividend quarterly, which would be 9% per annum, would bring, net, 4.71. First National Bank; the recent sales were at \$222, the dividend is 13%. That is about 5.86. Mercantile National Bank; that is 4.57. Savings Union Bank & Trust Co., that is a little less than 5.07. Here is some sugar stock; 47¾ bid, and 49½ asked, the Hawaiian Commercial & Sugar Co.; the price is about 48; that is 6.25. Here is the Hawaiian Sugar Co. That is about 7.83. The Hutchinson Sugar Plantation; that is 12.85%. The Kilauea Sugar Plantation; that is about 10.71. The Onomea Sugar Co., that is about 8.73. Taking the Spring Valley; that is about 5.93. The Associated Oil Co. is about 5.8%.

9405 A public utility enterprise in this state has hazards that any enterprise has; there is one hazard of a sugar company, there is another hazard of an oil company, there is another hazard of a bank, and there is another hazard of a public utility. I suppose that the investor will try and distinguish as well as he can between the hazards which he would think would arise in each case. As far as the bonds are concerned, they would be presumed to exclude the

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hazards. As far as the stock is concerned, the investor would invest in such a stock from the standpoint of taking some kind of a speculative chance. I did not intend to imply that the only hazard that was connected with the stock of a public service corporation lay in the fact of governmental regulation or control.

RE-CROSS EXAMINATION BY MR. SEARLS.

I should think that a water company, because it sells a product with which there could be no competition, so far as the character of the product goes, should be in a stronger position from the standpoint of the investor than a gas company or an electric company, where they have competing products that would render something approximating the same service, and for other reasons, too.

The San Francisco earthquake has had the effect of making the risk of investment in San Francisco enterprises higher than in other cities from the standpoint of the investor. There is certainly a feeling in many parts of the United States that there is an extra hazard in investing in San Francisco, and a special inducement required to invest there. Many people will not touch San Francisco bonds; the City and County bonds of San Francisco are discriminated against in certain places. Those bonds are selling at a fairly low rate, because there are plenty of us who do believe in San Francisco so far as City bonds are concerned. I would not say that that feeling is universal in regard to that risk out here, but it is held in a sufficient number of places, and to a sufficient extent to affect the cost of money here.

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The fact that the water company owns real estate bearing a large proportion to the total value of its properties over any other utility, would, in my opinion, have a bearing. The way the question comes into my mind is whether the real estate that they hold has a value aside from the enterprise; if it has not, I don't see that it is much different than the wires of an electric company; the wires are not any good unless they carry electricity. If the water company has lands only good for the production of water, and if the locality requires that water, so that the lands cannot be sold for farms or for residences, it seems to me that there is lacking any element of special security to the investor because the assets to that extent happen to be in terra firma. If you can think of a utility that had all its assets in one dam or under one roof, or in one hazard, then it might apply that you might have some kind of a disaster that would practically wipe out the entire plant of a gas and electric company, but where the company's money is invested in real estate, that cannot happen. I think the investor would look upon it as being a scattered risk, and he would feel that he had a certain amount of insurance. As far as I have been able to see that, it is not a large factor, but I would not want to say that it was not any factor.

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9409 If the San Francisco Gas & Electric Co. were operating in San Francisco alone as a separate corporation, and we had behind us the experience we had in 1906, I should say that as compared with the Spring Valley Water Co., that the Spring Valley would be altogether better, and it might even militate against ready sale of the gas company just located here—in its security. As a matter of fact, the Pacific Gas & Electric Co. operates over a vast territory, and while its assets are no doubt largely in structures, it would be my view that that scattering of the risk would tend to offset the concentrated hazard which showed itself in 1906.

Questioned by Mr. Greene.

If you were to assume the case of a public utility supplying water to a municipality, and also to assume that the municipality has actually undertaken, and is in the course of constructing its own supply to furnish water, that would have a very decided effect upon the mind of the investor if he were considering the securities of that company. That is to say, it would be a decided question for him to investigate and find an answer to as a factor in his investment. If it had an influence, it would tend to reduce the market for the securities.

Questioned by Mr. Searls.

9410 If you assume that you have a water company in a city that was about to build its own water supply, and that the city has declared its policy of acquiring the properties of the water company in conjunction therewith, and assumed that the Federal Constitution will prevent them acquiring those properties at anything less than their fair value, I should say that that would be another factor in indicating that the company was not going to get out of its properties any more than they were worth. The conservative investor interested in the question whether the assets are going to be sufficient to carry out the contract of liabilities. It is perfectly obvious that if the assets of this company have a certain value, and that value is sufficient to pay the liabilities, any condition by which they will get that value out will be a condition which could not disturb the mind of the investor in that way, but it is a matter of course that any competition which will threaten the company's business, and the company's earnings, will be an adverse factor in the mind of the investor.

Weeks Witness: GEORGE K. WEEKS for Plaintiff.

DIRECT EXAMINATION BY MR. GREENE.

I reside in San Francisco, and am 38 years of age. I am in the business of dealing in investment securities, and have been familiar with dealings in investment securities since 1899. Since 1901 I have been connected with the firm of N. W. Halsey & Co., either in New

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

York or San Francisco. Since February, 1905, I have been connected with the San Francisco office of N. W. Halsey & Co. as one of the joint managers. During that period of eleven years I have dealt continuously and extensively in bonds of California utilities and municipalities, and have handled collateral loans.

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I am serving as the president of the San Francisco, Oakland Terminal Railways, and in connection with my experience in dealing with investment securities, I have been on a number of boards of directors of public utility corporations of various types, and have had experience from the corporation standpoint as to the requirements incident to obtaining money from investors. I have been asked to consider the question of a fair rate of return to public service corporations, and my views I have reduced to writing, as follows:

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Spring Valley Water Company Rate Suits (1907-1915).

TESTIMONY AS TO INTEREST RATES.

The "going rate of interest", or the rate which under the operation of the law of supply and demand must be paid in order to secure capital, varies according to the character of the loan or investment. For this reason, and to prevent any misunderstanding as to the purport of the testimony given, I will testify as to three separate and distinct rates of return, viz:

(A) *The Current Rate of Interest* at which money can be obtained against the pledge of real or personal property, the lender being assured the repayment of the loan in full at a definite date, together with an agreed rate of interest. My experience has been that rates of interest on loans of this character in and about San Francisco during the last ten years (excluding, on the one hand, special loans of unusually liquid character against gilt edge collateral during periods of exceptionally easy money, and excluding on the other hand loans under extremely stringent conditions or against very speculative collateral) have ranged from 4% per annum to 7% per annum.

(B) *The Rate of Return which an established utility must earn* in order to attract, in competition with other available investments, capital needed in order to fulfill its public obligations and burdens, including the financing of the new construction, which must necessarily be undertaken from time to time by a public utility operating in a growing community. Based on my personal experience in the purchase and sale of the securities of public utility corporations throughout California, and particularly in and about the San Francisco Bay region, I testify that under average conditions, this rate must equal or exceed 7% per annum, and that at no time during the last ten years could the conditions herein specified have been met by a rate less than 6½% per annum.

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(C) *The Rate of Return the Receipt of which would have to be reasonably assured, to make it possible to obtain capital for the organization from the beginning* and the construction of a water utility system requiring the investment of \$45,000,000. This rate, in my opinion, would have to be not less than 8% per annum.

This testimony is based on my personal experience. I desire to present in support and explanation thereof certain pertinent facts, and a statement of certain essential principles, set forth, for the sake of clearness, under three subdivisions above specified.

(A) *The Current Rate of Interest at which money can be obtained against the Pledge of Real or Personal Property.*

My testimony on this point is based on an extensive personal experience with a certain class of loans, viz: loans secured by the pledge of marketable securities, and a general knowledge of rates of interest for other classes of loans during the period. Bankers who, I understand, have or will testify in this case can present much more authoritatively and in detail rates for interest on other classes of loans during this period. The rates of interest on loans of this character, however, are fundamentally and essentially different from the rate of return which a public utility must earn on its property in order to secure the investment of capital therein. The going rate of interest against secured loans, in my opinion, has this significance only in a rate case of this character, viz: that necessarily because of the comparative nature of the investments, the rate of interest which a utility must earn in order to finance itself and continue in business must at all times be greater than the going rate of interest for secured loans.

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(B) *The Rate of Return which an Established Utility must earn in order to do the financing necessary to the fulfillment of its Public Obligations.*

My testimony on this point is based, as already stated, primarily on my personal experience. I believe a statement of the following conditions will explain more fully why the rate of return which a utility must earn must necessarily be in excess of the going rate of interest on secured loans.

- (1) There is a fundamental difference between the loan of money against an obligation to repay it in full secured by collateral, which obligation is held by a bondholder or a noteholder and the position of a stockholder, the owner of a property charged with all the duties and obligations involved in ownership, including the control and management of the property, the return to bondholders or noteholders of money borrowed from them, with interest thereon, and the performance of all the other obligations of an owner. In the case of public utility property, where the maximum return to the owner is limited by public regulation and where there is therefore no chance of large profit to offset the burdens and obligations of ownership, I believe the return to the owner must normally be at least one and a half times the rate at which he can borrow money, up to a conservative proportion of the value of his property, secured by its pledge, i. e., if money obtained by the sale of bonds costs 6%, it would follow that an earning of 9% would be necessary to justify assuming the obligations

of ownership. If money could be obtained on bonds at 4%, an ability to earn at least 6% would be necessary, etc.

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- (2) *The owner of a public utility property must constantly raise new money for extensions and betterments. Unlike the owner of a private property, he cannot elect to stand on his present investment even if he so desires. The contract involved in his acceptance of a franchise has been held to necessitate the investment of money from time to time as required for extensions to serve a growing population. The making of these extensions necessarily involves, in due course, the construction of additional generating and producing capacity, including reservoirs, pumping stations, mains; that is to say, an enlargement of the entire operative system.*

- (3) *The owner of a public utility cannot ordinarily raise all of the money required by the sale of bonds even if he is willing to assume the obligations of this indebtedness. Investors will not lend money to a corporation by the purchase of bonds, or otherwise, for a comparatively low rate of interest unless a margin of security is provided through investment on the part of the owners (the stockholders), over and above the amount of their loan. Aside from this demand on the part of the investors, the Railroad Commission of the State of California has held that a portion of the funds of a public utility should be provided by the stockholders, several decisions indicating that at least 25% should be so provided. This is the converse of the situation outlined in Subdivision (1). There it was pointed out that under the natural operation of the law of supply and demand, it could not be expected that capital would be obtained to assume the obligations of the ownership except for a return approximately one and a half times the rate of return for secured loans. The point here made is that entirely apart from the natural demand of the capitalists, the technical conditions of corporation financing, including the public supervision thereof, are such that necessarily the earning rate on a solvent going property must be in excess of the cost to it of money obtained by the sale of bonds.*

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- (4) *Considerable hazard attaches to the ownership and operation of a water utility. Once a franchise is accepted, the operative property of the utility becomes impressed with the public use and the owner is usually in a position where he cannot retire from the business even if he so desires. On the other hand, he frequently is subjected to competition from the municipalities served and occasionally from other water utilities. The experience of water companies throughout the*

United States shows that there is a more general agitation on the part of the municipalities for the acquisition of such properties than exists in the case of any other utility. From the facts as presented in McGraw's Water Works Directory for 1915, a standard reference publication, it appears that in each of the ten largest cities of the United States, the water works are owned by the municipality; that in forty-one out of the fifty largest cities of the United States the water works are owned by the municipality; that of 4,872 cities and towns reported 3,045 or 62½ per cent. own and operate their own water works systems, It is a matter of common knowledge that the popular and political agitation for public ownership almost constantly present in the municipalities where the water works are privately owned creates a real hazard in the investment and tends to increase the rate of interest which must be paid by the privately owned utility to secure the investment of capital in its property.

In my opinion, there is no sounder or more accurate way of reaching a conclusion as to the rate of return which a public utility must earn than by applying the principles above stated to the actual cost of money borrowed by going utilities against the pledge of their property.

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The Spring Valley Water Company itself borrowed, in 1913, \$1,000,000 against its two-year 5½% gold notes, secured by the pledge of \$4,000 par value of mortgage bonds, constituting a first lien on all of its property, against each \$3,000 par value of notes sold. Of my own knowledge I know that there was active competition on the part of bankers for the purchase of these notes and that they were ultimately sold at a discount of 2 per cent., so that as a straight interest return proposition, these notes cost the company and yielded the bankers 6½ per cent. on the investment. I am informed that the company has put in evidence in this case additional testimony as to the expenses incident to obtaining this money, showing that the total cost of the money to the corporation amounted to 7.22 per cent. Last year the Spring Valley Water Company borrowed a further sum of \$2,500,000, represented by two-year gold notes, dated September 1, 1915, carrying the face rate of interest of 5 per cent. per annum, which notes were sold at a discount of 2 per cent., so that the interest return actually paid by the corporation and received by the bankers amounted to 6 per cent. per annum. In this case, I am also informed by the Spring Valley Water Company, that necessary expenses incident to the raising of this money has resulted in a net cost of the money to the corporation of 6.22 per cent. per annum.

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The Peoples Water Company, which has been supplying domestic water over a large portion of Alameda County, and a small portion of

Contra Costa County, has been in a process of reorganization for some time past and has been before the Railroad Commission of the State of California for a detailed study of every phase of its property and earnings. The Railroad Commission has found that, for the purpose of reorganization, the depreciated value of this company's property is \$14,100,000, of which approximately one-half, or \$7,558,731, represents the value of real estate owned. The net earnings of this property last year, after the payment of operating expenses, maintenance, etc., and before deducting a reserve for depreciation, amounted to \$1,025,748. Under this state of facts, it is proposed to issue approximately \$9,100,000 first mortgage 5½% bonds, secured by a direct lien on all of the company's property, to the preferred creditors at par, in settlement of their claims. A straight first mortgage bond issue, limited to 65 per cent. of a conservative appraisal of the value of the property covered and with net earnings more than double interest charges is considered in the investment market an unusually choice bond issue. It is my opinion that if, instead of offering these first mortgage bonds directly to old bond holders and other creditors, they were offered in the market for cash, the gross cost of this money to the corporation would be not less than the 5½ per cent. rate proposed to be paid.

By reason of the fact already stated, that a large proportion of water properties are municipally owned, and by reason of the further fact that most privately owned companies have, in the nature of the case, been established for many years, it is difficult to obtain many recent examples of the actual cost of money to water utility companies throughout the United States. Except for the Peoples Water Company above referred to, the only important water company with which I am personally familiar, which has been refinanced within the last year, is the Arkansas Water Company, serving a population of approximately 75,000 people in and about the City of Little Rock, Arkansas. The property of this company was appraised by Mr. James N. Allison, a consulting engineer of wide experience and repute, at \$2,225,000. A first mortgage was executed under which the bonds outstanding were limited to \$1,400,000 covering all of the above property. These bonds, bearing interest at the rate of 6 per cent. per annum and running for fifteen years, were sold by the corporation to the Chicago branch of N. W. Halsey & Company, the organization with which I am connected, at a price of 92½ and accrued interest. The cost to the corporation of this loan amounting to less than 65 per cent. of the value of its property was, therefore, approximately 6¾ per cent. per annum.

The above examples of the actual cost of loans to water utility corporations, secured by first mortgage for conservative portions only of the value of their property, ranging from 5½ per cent. to 7.22 per cent. per annum, in the light of the principles above stated, amply

support my conclusion that a going water utility cannot finance the new construction necessary to the fulfillment of its public obligations, and therefore cannot permanently continue in business, unless it earns a return of at least 7% per annum on its property.

(C) *The Rate of Return, the Receipt of which would have to be reasonably assured, to make it possible to obtain capital for the organization from the beginning and the construction of a water utility system requiring the investment of approximately \$45,000,000.*

The facts and principles which have been set forth under proposition (B) apply with full force to the proposition now discussed. A rate of interest higher than that required by a going utility would be necessary in order to meet the conditions herein set forth for two reasons:

1st. On account of the magnitude of the enterprise and the difficulty of obtaining, within a short space of time, so large an amount of money for investment in one particular utility operating almost exclusively in one municipality; and

2nd. By reason of the many contingencies, aside from the contingency of ultimate loss of principal, involved in the building up from the beginning of a going income producing enterprise of

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It is difficult to clearly distinguish between the increased rate of interest necessary to meet the conditions herein set forth and the business necessity of offering some chance of speculative profit to overcome the necessary risk incident to the establishment of a new enterprise. In fixing a minimum rate of interest of 8 per cent. as necessary to attract capital for the organization and building up of a utility of this magnitude, I have attempted to eliminate entirely the considerations of risk, on the one hand, and of speculative profit, on the other. The condition described, however, is not one which exists today or has existed in the case of this particular corporation at any time during the last ten years, and a separate estimate of necessary interest return to meet this condition is made by me largely for the purpose of making entirely clear the limitations of my estimate of a necessary earning power of 7 per cent. per annum as essential to the proper operation of a going utility.

DIRECT EXAMINATION BY MR. GREENE.

9422 The same condition would apply, approximately, to a utility having a property valued at \$30,000,000 or \$35,000,000. There is no particular charm in \$45,000,000; I had in mind merely a very large amount of capital, a very substantial investment. I am familiar with the general finances of the Pennsylvania Railroad, and its financial standing. A general mortgage, 4½% face rate bond issue was put out last year, running for 50 years; those bonds were limited in the face of the mortgage so that they could never exceed the par value of the outstanding stock. For more than 30 years the stock of the Pennsylvania Railroad has been on a continuous dividend basis, and is considered by investors in Pennsylvania, and throughout the East generally, as the most conservative investment stock there is. The Pennsylvania system, both from an operating and a financial standpoint, is the strongest railroad system in the United States. Those general railroad bonds, under those conditions, were offered to the public at \$98.50, yielding, I should say, about 4.60 and a fraction per cent. The issue was a \$65,000,000 bond issue, handled by Kuhn, Loeb & Co., and there must have been a considerable margin between the price for which they were offered to the public and the price which the railroad company received. My judgment is that the money must have cost the railroad not less than 4¾%.

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With reference to the New Haven; I can say that the period of high investment repute extended up to the incumbancy of Mr. Mellen, who became president of the New Haven about 1902—to my positive knowledge I know it was since 1900. During the entire time of his incumbancy the New York, New Haven & Hartford Railroad was subject to the jurisdiction of the Interstate Commerce Commission, and also to the jurisdiction of the Railroad Commission of the State of Massachusetts, which has been in existence and had supervisory powers since about 1869, and it was furthermore subject to the jurisdiction of the Board of Utility Commissioners of the State of Connecticut, so that during all of that period the New Haven Road operated subject to the jurisdiction of at least three supervisory public bodies of a character somewhat similar to the California Railroad Commission, but that did not guarantee the stability of the enterprise.

CROSS EXAMINATION BY MR. SEARLS.

9424 The Massachusetts Commission did not have rate-fixing powers until about 1911, but it had powers in regard to extensions, certificates of public convenience and necessity, and in regard to accidents and to the general financial and operating oversight of the company. I don't think myself the question whether a company operates under a public service commission or not has any material influence on the price of its securities. I have not noticed any noticeable effect in the market price of California securities, or the cost of money to California utilities during the life of the present commission.

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Halsey & Co. purchased, on joint account with one of the banks, in competition with other bidders, the first issue of Spring Valley 5½% notes in 1913. Our firm does not in any way now represent the Spring Valley Water Co.

I know that this recent issue of notes cost the Spring Valley Co. at least 6½%, and 6% for the additional issue. The financial standing of the Spring Valley Water Co. is considered very good.

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My testimony has been partly as to the rate which the company would have to pay for new money, and in addition to that, as to what, in my experience, and based on my experience in public corporation affairs, it would have to earn in order to get that money; that is, the showing it would have to make to the moneyed interests in order to market its securities. If they were going to get new money at 7%, they would have to show they were earning 7%. In other words, no house will buy an issue of bonds unless the earnings are at least double the interest on the bonds, so that there is the one question as to what the corporation would have to pay for the money obtained on these bonds, and the further question of what they would have to earn before they could sell them. The further question is as to what they would have to earn in order to continue operations after it was actually in preliminary operation. The same rule would apply as to short-term notes, as to their being supported by necessary earning power, although it would not possibly apply as stringently as in the case of long-term bonds, because the average buyer does not feel he is facing so many contingencies as he would in buying a 20 or a 40-year bond. If the company is putting out notes at 5½% or 6%, the general impression of the public would be that their earnings would at least be double the interest on the notes. That is, on all outstanding obligations.

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I don't think that water companies, as a rule, are able to borrow at lower rates of interest than gas or electric companies. I think the large amount of real estate which a water company must necessarily hold is a factor entering into the market rates which they must pay for money, particularly if the real estate is available for sale. The conditions are altogether different from those of the Pacific Gas & Electric Co., which has not, at any time during the last ten years, been able to put out a security which was a first mortgage on a large proportion of its property; it has been forced, by reason of existing mortgage liens covering the bulk of its property, to put out bonds which were a second or a third, or some subsequent lien, and that has affected the cost to it of money. When I say property available for sale, I did not think the fact that it was land made a material difference in the cost of money to the corporation, or the price that people were willing to pay for the bonds.

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From my conversations with investors, I do not think that the outside lands, acreage lands of the company, impress them as adding

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a great deal of security to the Spring Valley bonds, over and above a given amount of physical property otherwise. I do think, as a matter of practical experience, and talking with investors, that the ownership of a large amount of land in the City of San Francisco, presumably available for subdivision, does affect the minds of investors to a considerable extent, and gives them additional confidence in the bonds, and an additional speculative interest in the stock of the corporation. That latter phase would not be true of a gas or electric company which owns only the real estate necessary for its generating plants and office buildings as a rule.

I have assumed, in my estimate, as a matter of ordinary business experience, that a public utility in order to prosper at all, has got to serve the public which it holds itself out to serve, including the natural growth of the communities it operates in. My general understanding is that public authorities are able to compel such extensions, but aside from that I believe it is a matter of business necessity if a company is to continue in business, and not invite competition, and not invite from the public unduly hard regulations, that it has to get new money to adequately serve its territory.

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I don't think the mind of the average investor is very clear on the point of whether the public authorities could or could not compel the company to make any such extension without allowing them an adequate rate of return on the new money. I have in mind particularly the street railroad business, and I think that conditions that have obtained have created in the minds of the public considerable doubt as to whether or not there may be regulation without protection. I recall instances where companies have not been allowed to abandon non-remunerative lines. I recall instances where the conditions were such that the company could not build new extensions which were demanded, which in turn has invited public municipal competition, which is to the manifest detriment of the security holder of the privately owned utility. That may possible have been brought about by the refusal of the company to make extensions, unless it could receive the pro-rata which it thought it ought to get.

Tourny

Witness: GEORGE TOURNY for Plaintiff.

9433

DIRECT EXAMINATION BY MR. GREENE.

I am 54 years of age, and reside in San Francisco. I have been connected with the German Savings & Loan Society since 1878. In 1910 I became vice president and manager, which position I still hold. It is our business to know the current interest rates on mortgages, both on city real estate and on country real estate. I have gone over the history of that subject from 1907 until 1914. These figures that I have are net rates to the lender, but they do not include any figures for legal expenses or recording, and kindred charges.

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In 1907 the rate on San Francisco property was 5 to 5½ per cent; on country 5½ to 6½ per cent. In 1908 the city rate was 5½%, and in the country the rate was 6 to 6½%. In 1909 the rate was 5½ to 6% in the city; in the country it was from 6 to 6½%. In 1910 it was 5½ to 6% in the city, and 6 to 6½% in the country. In 1911 the city rate was 5½% to 6½%, and in the country it was 6% to 7%. In 1912 the rate was 5½% to 6% in the city, and 6% to 7% in the country. In 1913 the city rate was 6%, and the country rate was 6½ to 7%. For 1914 the city rate was 6 to 6½%, and 7% in the country. By "the country" I mean farming loans where the interest is payable either quarterly or semi-annually. In outside cities the rate is generally half a percent more than it is here.

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The borrower furnishes, in the case of a city loan, a certificate of title insurance to the property. If he obtained that certificate at the time he purchased the property, all that he would have to do would be to have it continued; that is an expense of \$10, irrespective of the amount of the loan. The cost of drawing up the mortgage is probably \$5, and then the recording is probably \$2 or so, with the notary fee. The bank itself receives the net rate of interest I have quoted.

In the case where the borrower has not a policy of title insurance, he has to furnish an abstract of title, and then has to pay a fee to the bank's attorneys for examining it. Our bank has a schedule for those fees. It is an estimate according to the amount of the loan. In case of loans outside of San Francisco, say a farm loan, a full abstract of title has to be furnished. That is at the expense of the borrower, and then the attorney's fee is in addition to that.

9435

We are making farm loans. We always renewed our farm loans. After the fire in 1906, on account of the demand here for rebuilding purposes, we probably went for a year or two, when no new farm loans were made, but any existing obligation was always renewed, no matter where it was held.

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The rates I have stated are the actual rates the bank receives. Of course, if you add on the expense in connection with the loan, that increases the rate. Interest is paid monthly on city loans; on country loans it is paid quarterly or semi-annually; in fact, we always prefer to have the interest paid in as short intervals as possible. In the case of a new loan, we might deduct the first month's interest, but not further. In accordance with the terms of the note, we have the right to deduct the interest in advance, but it is not always deducted.

CROSS EXAMINATION BY MR. SEARLS.

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These figures that I have given are the actual figures from our own bank records. The savings banks have no agreement as to rates, except the general ordinary practice. I will say for our insti-

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tion that our uniform rate is 6% on city loans. We don't make exceptions. We endeavor to treat every client alike, irrespective of the amount. We have had, within the last month, one loan of over \$500,000, and one of over \$600,000; we have, in addition to that, some of our prominent banks endorsing the notes in those cases, and they were both at 6%. We adhere to the rate we fix for the time. There may be trust funds, or there may be individuals who would make a loan at figures less than I have given, but that does not establish the going rate of interest. This rate that I have given is the net rate that we have received on our loans during this interval, taken from the books of the bank. We establish in our bank from time to time the rate that we will charge, and we don't depart from that rate, and those rates are the rates I have testified to here. I mean, when I say in my table, that the rate for any year was $5\frac{1}{2}$ to 6%, not that at any particular time it might be either one or the other, but that during a portion of that time it was $5\frac{1}{2}\%$, and no other figure, and that during another period it was 6%.

I am familiar with the loan made by the Equitable Life Assurance Co., on the Phelan Building, for \$2,000,000, and with loans by the New York Life Insurance Co. to H. E. Law, of \$1,000,000. Both of those carried 5%, and sometimes those loans carry life insurance with them. That is sometimes a condition.

9439

In the fall of 1907 occurred the panic, but the rate on real estate loans at that time I don't think varied more than half a percent from the former rate. That is a local condition that controls. The rates in 1914 were higher. Our rate in the city here now is 6%; in the country it is $6\frac{1}{2}$ to 7%, 7% where the interest is payable semi-annually, and $6\frac{1}{2}\%$ where it is payable monthly. That is the way we differentiate in the payment of interest; we prefer to have interest payable monthly or quarterly on account of our semi-annual dividends.

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I know of a loan made in April, 1914, from the Metropolitan Life Insurance Co., to James D. Phelan, of \$2,000,000. I understood that carried a rate of 5%. In the same year there was a loan from the Hibernia Savings & Loan Society to David Hewes, of \$673,000. That was in January, 1914, and the property is at Market and Sixth Sts. That was probably a renewal of a former loan. I do not think it carried a 5% rate. There is an explanation about some of these loans, and as long as it is a loan made by the Hibernia Bank, I would not like to give the explanation.

I recall a loan in 1909 from the New York Life Insurance Co., to the City of Paris Building, \$555,000. I should think that carried a 5% rate. I have the information that the owner of the property had to take out some life insurance in that case, too.

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In the case of the German Bank our rate of 6% is uniform, irrespective of the amount. The Hibernia, I don't think follows quite the

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

same policy. I think the Savings Union Bank & Trust Co. does follow the same policy. The German Bank pays on savings deposits 4% interest, and that is practically the universal rate throughout the city. The total deposits at the different savings banks in the city aggregate something over \$212,000,000. I think that 4% is rather a high rate of interest; in fact the rates of interest to depositors in other parts of the Coast here, for instance, in the State of Washington, from the first of next July, will be reduced. The banks take this money which they have acquired on the payment of 4% interest, and lend it out on approved real estate, for the most part, at from 5 to 6%, or 6½%. Out of that figure the bank has to take care of its reserves, its losses, its cost of operation, and what the Bank Act requires to be added to the reserve fund. When I say "net rates to the lender", I mean that that is the rate that the bank charges and collects. The borrower pays the taxes and the expenses.

9442

RE-DIRECT EXAMINATION BY MR. GREENE.

Saving banks, normally, have some amount of their deposits idle; just at present I think there is not a savings bank in the city here that is not operating with probably twice as much idle money as they should have.

Our rate of interest on city property in 1915 was the same as it is now; our rate today is 6% on city loans, and 7% on country loans, and that is what it was in 1915.

ONE HUNDRED AND TWENTY-NINTH HEARING.

APRIL 3, 1916.

Witnesses: F. P. MUHLNER for Plaintiff.

J. J. SHARON for Plaintiff.

(A copy of the repairs and maintenance and alterations to build- 9443-9444
ings and office at 375 Sutter Street—3 pages—which comes under the
classification 14-C of the general summary, and also 2 pages of repairs,
maintenance and operations to roads, under the classification of 14-D
of the same summary, containing the details of Mr. Bailhache's ex-
clusions for the fiscal years 1907-08, to 1914-15, inclusive, were offered
as a part of "Exhibit 176").

Witness: F. P. MUHLNER for Plaintiff.

Muhlner

DIRECT EXAMINATION BY MR. GREENE.

9445

Referring to an item of Belmont Pump Standpipe, which Mr. Bailhache took exception to in the year 1910-11, operating expenses of \$427.94; in relation to that our construction account for the cal-

endar year 1911 contains as a permanent improvement the cost of raising the Belmont Pump Standpipe, and the figure he has taken, \$427.94 is included in our construction cost covering that work. The total cost of that construction was \$1,031.80; this figure of \$427.94 will be a duplicate deduction, should Mr. Bailhache's figure be allowed to stand in the deduction for that fiscal year. There may not be precisely a credit on our books for that charge, but that item is included in the total cost of that work for the year, and those costs were charged to new construction. That fact I ascertained since the last meeting.

9446 The same thing is true in the City Reservoir account of raising the 41st Avenue Tank, which appears in Mr. Bailhache's segregation of 1912-13 of \$771.69; a journal entry correcting these charges, which were originally charged to operating expenses, was made in November, 1912, and our new construction for that year included this new item as a new construction item. That is in the year 1912-13, but our new construction item for the calendar year 1912 includes this cost of raising the 41st Avenue tank. That is in the same category as the other. Where I have it charged to operation during the first half of the fiscal year, and then credit it, and charge it to construction during the last half, that would affect the wrong year by my credits, but Mr. Bailhache did not, apparently, take into account that credit. He simply took the deduction out as he first saw it on our books, and when the credit was made in the following portion of that calendar year, apparently he overlooked the credit, and did not make an allowance for it. It would be all right for him to take it out of the proper year if he made a compensating credit in the following year, which he did not do. There would be no harm in the total amount taken out, but he has taken this out as an exception from the total operating expense, which will appear as a duplicate deduction.

Questioned by Master.

9447 My suggestion was that you can deduct it from the operating expenses of 1912, and add it to the operating expenses of 1911. It actually is contained in the operating expenses for 1911 at the present time, but you cannot deduct it in the following year, because in the following fiscal year my total operating expenses will include that corrected entry as a credit. It would be correct to deduct it from the operating expenses of 1911, and add it to the operating expenses of 1912, in order to compensate for a deduction there, which was merely a correction. Mr. Bailhache's deduction appears in the year 1912-13. The correction in the charge appears in the same fiscal year; there would not be that condition in that particular instance, but if it were so, the other would have to be deducted.

The Ocean View Pump was built in 1907. I find, also, that the pile bulkhead at Hadsel Ditch, built by the Western Pacific Railroad

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Co. for us, is still in use, and is necessary in order to protect the banks against washing away in the winter months. That item amounted to \$1,810.50, and I think the company will concede that as a proper construction charge. Another item, regarding which a question arose as to whether it was the rip-rap on the Sunol Dam itself, or along the banks of the stream. I find that was the rip-rap on the Sunol Dam, and that from time to time it was necessary to replace and repair that rip-rap. It is conceded as a maintenance charge. I do not think that any time it has been necessary to replace the entire rip-rap; only small portions of it go out in the flood waters. This charge is only for a small portion of the rip-rapping. An item of 900 odd dollars of rip-rapping done in the year 1909-10, and in the following year. It does not refer specifically to the Sunol Dam. 9448

Mr. Greene: That \$900 covers rip-rapping done during two years to all the dams. 9449

Mr. Muhlner: I have some items of advertising that appear on the general classification on page 9, the first item in the fiscal year 1907-08, \$1690. There was a published statement of the Spring Valley Water Co., to the Board of Supervisors, in the newspapers, regarding the discussion of the various plans of the sale of the property, and disposition of the company's holdings. The next fiscal year was 1908-09, \$324. There was a publication as to the development of the present water supply of the Spring Valley Water Co., and also the prospective development of the Spring Valley water supply. By publication I mean publication in the daily press of San Francisco. It was not a legal notice for use in the Pleasanton District. The year 1910-11, \$3200. The big item in that was for 20,000 pamphlets issued by the water sales department for general distribution to the rate payers and people generally in San Francisco. It contains pictures of the Spring Valley properties, and a general description of these properties, its purpose being purely publicity work. 9450

Mr. Metcalf: It seems to me that it was a desirable thing to do. I have had the feeling that it was advantageous in the relations of the company to the people of the city, that the people should have a juster conception of the magnitude of the property, and this was simply one of the means used of bringing that before them; the same thing is true of the opening up of the roads so that people could go over the properties and get some conception of their extent. I do not think that the prime purpose of that issue was to arouse public interest against the acquisition of the Hetch-Hetchy.

Mr. Muhlner: I do not know of any other cases where the company, by the issuance of pamphlets has gone to the expense of \$3,200 to inform the people about the water supply. 9451

Mr. Metcalf: I know that the Denver Union Water Co. went through a somewhat similar experience in issuing a lot of statistics

with regard to the operations of other companies in comparison with the Denver Company, and merely as a campaign of education, and its benefit was good.

(A copy of the above pamphlet was admitted in evidence for the purpose of showing the character of the advertising which was included under this charge, and it was marked "Plaintiff's Exhibit 178").

94511½ Mr. Muhlner: In the next fiscal year, 1912-13, there was a publication which covered the report of the negotiating committee of the board of directors of the company in their negotiations with the city toward the prospect of the sale of the property in 1911. The amount of that item is \$436, for publication of the report in the daily press.

9452 The next item in that same fiscal year was \$164 for warning notices issued by the company in the press for the consumers to retrench on the use of water. That is, for them not to waste water. The next item in the same fiscal year, a bill of Blair, Murdock & Co., for \$244, printing of the report of the negotiating committee. That report was for distribution to the stockholders.

9453 Mr. Metcalf: After conference with the city, we have agreed on the amount of pavement which was actually cut, removed and relaid, upon the total sum of \$223,000, excluding the overhead and interest during construction charge. We also agreed on the cost of replacing all of the pavement, whether it was cut originally or not, and I think that total amount, excluding the overhead and interest during construction, was \$1,319,000. The \$223,000 is a portion of that. We submitted, also, the detail segregation of operating expenses, relating to the telephones and to the fences, giving you not only that segregation, but the total of the amount, which appears in the several fiscal years under consideration as an operating expense in Mr. Muhlner's, or the company's accounts, and at the end of this list we have a memorandum upon the agreed basis for determining land values for the years 1907 to 1915, from the values established by the Court for the year 1913, bringing together the various stipulations for your convenience, and giving references to the page of the record from which these percentages were obtained. We will add in a day or two, as soon as agreed upon, the figures relating to the roads and the planting, and forestration.

Questioned by Mr. Greene.

9454 The first computation of \$223,000 represents pavement which was actually cut and replaced in order to install pipes of the company, and it means the reproduction cost of that work; not the original cost, because we have no idea what the original cost really was.

(The above stipulated statement was offered and marked "Plaintiff's and Defendants' Exhibit 179").

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Witness: J. J. SHARON for Plaintiff.

DIRECT EXAMINATION BY MR. GREENE.

(Counsel for Plaintiff offered in evidence a copy of the summons and complaint of the City and County of San Francisco, a municipal corporation, against Spring Valley Water Co. et al, No. 53,708, in the Superior Court of the City and County of San Francisco, which was filed as of the date of December 31, 1913. Its admission was objected to by Counsel for Defendants, and it was suggested by the Master that before offering it that the resolution of the Board of Supervisors, as passed by that body, preceeding the filing of this complaint, should be attached to the complaint and summons, and the entire matter offered, at which time it would be considered).

9455-9458

(Attention was called to the fact that on page 35 of the record a certain Exhibit No. 9 was referred to and not offered. It was ruled that if the record does not show it as an exhibit, that it be so shown now).

Mr. Sharon: Station No. 6 appears in Exhibit 12-E, and is shown in the table, but is not shown on the map. It is at the proposed Arroyo Valley dam site, that is, at the northerly end of the watershed area marked "C", being the Arroyo Valle watershed area. It is at the mouth of the Arroyo Valle Canyon, which would be at the north of Arroyo Valle watershed.

9459

Referring to page 70 of the record, where reference was made to the height of the Crystal Spring Reservoir; that difference in elevation, and in the reservoir area, appeared formerly in the table which was presented and marked "Exhibit 12-H"; the errors in that former exhibit have been corrected in this new exhibit. The errors were in the Calaveras Reservoir, in the column headed "capacity in million gallons". The former exhibit had 55,000 million gallons, whereas the correct capacity at the highwater line of the proposed Calaveras Reservoir is 53,000 million gallons. I think also that in the present level of the Crystal Springs Reservoir the area shown on the exhibit was 1,443 acres; the correct area is 1,493 acres.

Mr. Metcalf: The proposed future level of Crystal Springs, the overflow in the former exhibit is given as 300; it should be, and is in this exhibit, 323; in column 7 on the same line the water surface of full reservoir in acres corresponding to that proposed future level was 1,770, and should be 2,135. The column before that, depth in feet overflow to bottom, formerly was 134 and is corrected to 157. Also the capacity of million gallons on the same line, column 8, which was previously 28,974, should be 43,000; these changes modify the footing for the total Peninsula system on present development; in that column, 2,009.39 acres becomes 2,100 acres. On line 5, column 11, the assumed economic future development in million gallons a day for the Calaveras

9460

was 40 millions, and is now 45 millions, in accordance with the testimony of Mr. Hazen, and that changes the footing shown under 8 in the last column, which was previously the entire assumed economic development, excluding the coast streams, 95 to 115, now becomes 100 to 120. The 40 million was Mr. Hazen's estimate before the last records were assembled, and the winter flows measured; in other words, before the rating was completed.

9461

Mr. Metcalf: This statement of the present development, shown in column 10, corresponds to the average yield throughout the entire year. Certain parts of the water rights were discussed on the basis of what had been done in individual months in the year.

Mr. Searls: The water right estimate was based on the maximum sustained development for one month.

9462

Mr. Olney: Yes, and there has been no admission on our part, and I would not for one moment want to admit that we could not obtain every day in the year the year through the 20 million gallons from the Alameda source on the present development; we claim we could get it. I do not think that table correctly represents our claim in regard to the amount of water we get out of the system.

(The sheet was returned to Counsel for Plaintiff to be introduced when it does show just what they want to show).

9463

Mr. Sharon: Referring to page 91 of the record, where certain questions were raised as to discrepancies in reservoir acreages: There was a discrepancy between the reservoir areas as compared with the aggregate totals of the parcels as shown in the inventory. I have prepared a statement on two sheets, in which that data is set forth, showing the reservoir areas as printed in the inventory, and correct reservoir areas, and the differences in the values of the watershed areas by the company's and city's witnesses followed by the correction of the areas. This is an analysis showing the difference between the correct areas and these areas as shown in the printed inventory. On the Pilarcitos Reservoir there is an excess of reservoir area shown in the printed inventory of 19.3 acres. The values upon Mr. Baldwin's basis was \$1,581, and upon Mr. Hoag's basis \$1,257, and upon Mr. Smith's basis \$2,480. The Stone Dam, in the printed inventory, was shown in one parcel No. 5-2, 4.1 acres as reservoir, which we have omitted as reservoir area in these later tables, and that made a difference in the value of watershed upon Mr. Baldwin's basis of \$410, for Mr. Hoag \$246, and for Mr. Smith \$240.

9464

The correct reservoir area at San Andres Reservoir is 44.65 acres larger than that in the inventory, and the valuation of that watershed which must be deducted from the total watershed valuations of Messrs. Baldwin & Hoag, Rodgers & Smith, amounts, as shown in columns 6, 7, 8 and 9, to \$17,136 for Mr. Baldwin, \$18,122 for Mr. Hoag, \$29,103

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for Mr. Rodgers, covering only a portion of the parcels, and \$16,820 on Mr. Smith's basis of valuation. I have simply noted the difference between the inventory area and the correct reservoir area in the Crystal Springs Reservoir, and did not attempt to make any correction for the 10 acres in the 26 parcels involved in the table; I simply left the statement which appears on the bottom of page 2 to cover Crystal Springs Reservoir. The valuations that have been made so far have been based on these correct areas.

9465

("Discrepancies in reservoir areas" introduced and marked "Plaintiff's Exhibit 180?").

Mr. Searls: We will accept these changed figures as being correct. (Copy of Reynolds' testimony introduced and marked "Plaintiff's Exhibit 181").

9467

(Reynolds' exhibits in 1903-4-5 consolidated cases introduced and marked "Plaintiff's Exhibit 182").

Mr. Sharon: I have checked certain references to the minutes of the water works, as asked by Mr. Searls on page 292 of the record, and I found that those minutes were correctly quoted by Mr. Searls.

9468

I have a revised table showing Mr. Gale's valuation, and this is a correct copy of Mr. Gale's appraisal sheet.

The Master: I will substitute it for the original sheet.

(Some sheets showing corrections of errors in extensions in Exhibits 18 and 19, filed by Mr. Baldwin, were substituted for Mr. Baldwin's exhibit).

There was also an error in Mr. Clayton's exhibit. The error in his total was pointed out by Mr. Clayton in his testimony; the first one appears on the first page, opposite Parcel 225, and the other corrections appear on the second page opposite Parcels F-268 and f-268.

9469

The Master: This will be substituted also.

Mr. Sharon: I also have some corrected sheets of Mr. Mortimer's tables; the corrections that were made there appear on the first page, changing the acreage of Parcel 279 to 117.533 acres; it was just a mistake in copying the acreage, and not in the dollars. Another correction was made on the first page in the total value of Parcel 282; the correct amount should be \$3,545.50. That change in the amount of Parcel 282 also changes the grand total to \$2,017,460.20.

The Master: I will substitute that. That was Exhibit 35.

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

COST OF MONEY—INTEREST RATES ACTUALLY PAID UPON MONEY RAISED BY
 SPRING VALLEY WATER COMPANY UPON TWO YEAR 5½% GOLD NOTES
 SOLD DECEMBER 1, 1913, MATURING DECEMBER 1, 1915, AND
 UPON TWO YEAR 5% COLLATERAL TRUST NOTES, SOLD
 SEPTEMBER 1, 1915, MATURING DECEMBER 1, 1915.

9470

Two Year 5½% Gold Notes Issued December 1, 1913.

Face Value, sold Dec. 1, 1913.....		\$1,000,000.00
Deduct Discount 2%, N. W. Halsey & Co.....	\$20,000.00	
Miscellaneous Expenses, attorney's fees, filing fees, etc.....	5,707.00	
Total Cost of Issue.....	\$25,707.00	
Cost of redemption:		
Discount ½%.....	\$5,000.00	
Publication Notes, etc.....	119.39	
Total Cost of Redemption.....	5,119.39	
Total Cost of Issue.....	30,826.39	30,826.39
Actual Amount Realized by Sale.....		969,173.61
Annual Interest 5.5%.....	\$55,000.00	
Sinking Fund, 2-year 5.5% rate = 0.4866 x \$30,826.39 = approximately	15,010.00	
Each annual payment, approximately.....	70,010.00	
Resulting actual rate on proceeds of sale.....	7.22%	
Nominal rate.....	5.5%	

Two Year 5% Collateral Trust Notes of Sept. 1, 1915..... 2,500,000.00

Deduct Discount, 2%.....	\$50,000.00	
Miscellaneous Expenses, attorney's fees, filing fees, etc.....	5,536.75	
Total Cost of Second Issue.....	55,536.75	
Actual Amount realized by sale.....		\$2,444,463.25
Annual Interest 5%.....	\$125,000.00	
Sinking Fund, 2-year 5% rate 0.4878 x \$55,- 536.75 = approximately	27,100.00	
Each annual payment.....	\$152,100.00	
Resulting actual rate on proceeds of sale.....	6.22%	
Nominal rate.....	5%	

9471

The information for the above came from the books of the company, the records of the company. The Crystal Springs pipe line was broken in several places between the Crystal Springs Dam and Millbrae. Those breaks were simply ruptures in the round seams, due to the shock of the earthquake. The main breaks occurred on the swamps near South San Francisco, and in Visitacion Valley, and in Guadalupe Valley. In those places the pipe was thrown completely off the trestles supporting it. That was the Crystal Springs pipe line that was referred to in the testimony, and Mr. Grunsky was asked where the breaks were, and he did not know specifically; he knew there were a number of them along the line.

9472

(A copy of deed, San Mateo Water Co., offered and marked "Plaintiff's Exhibit 183").

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

Mr. Sharon: Referring to the De Saissette valuation in Mr. Schween's figures, page 2847 of the record; I checked those figures, and the resulting value per acre of the entire tract of 3,300 acres is \$51 per acre.

Referring to page 3,283 of the record; there was a reference made by Mr. Smith in his testimony as to the acreage of a portion of the Howard Tract, and a portion of several parcels south of San Mateo Creek that he had placed a valuation upon, and upon being asked where he got the acreages, he said he was furnished the acreage by someone. These were the acreages that were excluded by the city in the condemnation suit, and amounted to 209.16 acres. I believe, in the Howard Tract. I have forgotten what the other acreages were, but those acreages are the acreages that were excluded in the condemnation suit.

The Pleasanton pipe line was laid by the company with its own men. The pipe was manufactured by the Francis Smith Pipe Works.

(Counsel for Defendants agrees with Counsel for Plaintiff that Francis Smith & Co. did actually manufacture the pipe that runs from Pleasanton to Sunol). 9472½

Mr. Sharon: There were no specifications for the fabrication of that pipe. It was bought as manufactured. I never saw any specifications for the pipe. I was in the engineering department when the president asked us to make an estimate of the cost of laying a 36-inch pipe from Pleasanton to Sunol, and that estimate was furnished to him, and in a few days the president sent us a letter in which he stated that he had ordered some 20,000 odd feet of 30-inch pipe from Francis Smith & Co., and that the price was \$1.90 a foot, which accords with these figures here. I have never seen any specifications, and I don't know that there were any. I know there were no specifications furnished to the president by the engineering department for that pipe. Mr. Bourn was the new president, and he ordered this pipe. 9473

Mr. Searls: If the Francis Smith & Co. got that order without any specifications, and that is a fact, I am willing to take your statement for it. 9474

Mr. Greene: That is a fact.

Mr. Sharon: The cost of the Crystal Springs Dam is given by Mr. Wenzelberger in a separate tabulation, and I don't know that it was ever handed in, but the total amount that he shows in that separate tabulation of the Crystal Springs Dam account is the same total he charged into the new construction account. That tabulation was based on the books of the company. I have a photostat copy of it, and it must have been an exhibit. I borrowed these records out of the court 2 or 3 years ago, and the statement is called "Spring Valley "Water Co., Crystal Springs Dam account, 1886-1895, inclusive, dam 9475

“proper 1886-1892; Howard Cut, 1893-1895”. Then he shows the expenditures by months and days for the year 1886, the source of those expenditures being Ledger G, Cash Book 13. I note on page 26, by Mr. Wenzelberger, that he could not find Cash Book No. 14; then apparently the amounts are taken for 1887 from Ledger G, a lump sum. I have taken the figures as Mr. Wenzelberger had them; I don’t know whether there are any errors in them or not.

9477 On the original Exhibit 12-K there were in the last column two or three figures that had been left out, and I have placed them here in this exhibit.

The Master: This may be substituted for the other.

Mr. Sharon: I have a table showing a segregation of Mr. Clayton’s figures under reservoir acreages. This rests on my testimony. I have taken Mr. Clayton’s figures and applied them to the proper parcel.

9478 Mr. Hazen was asked to have segregated the total area—Plaintiff’s Exhibit 164—which he gave at page 29, under the heading “Sunol “other watershed lands”, aggregating 3,000 acres which he appraised, or put in his exhibit \$134,800. I have two sheets here which could be used to show the segregation that was made there as between the Sunol filter bed lands, of 5,573 acres, and the other watershed lands, 3,000 acres; that is, those total gross areas have been subdivided according to the parcels of land that are shown in the map Exhibit 8. I made that segregation at Mr. Hazen’s request. This does not show that I segregated the De Saissette and Hadsell pieces between the hill land and valley land there. Mr. Hazen included in the Sunol Filter Gallery lands all of the Hadsell Tract of 2,317 acres; of the De Saissette Tract there were 2,414 acres in the Sunol Filter Gallery lands, and the other 900 acres are in the San Antonio; that was the only parcel that was split. I want to call attention to an error that occurred in Mr. Hazen’s total, in the amount of money which he set opposite the other watershed lands he had \$134,800, and the correct amount should be \$149,558. He took the average figures of Messrs. Gale and Schween.

The tables referred to are as follows:

LANDS IN USE, OUT OF USE, RESERVE.

ALAMEDA SYSTEM, SPRING VALLEY WATER COMPANY.

SUNOL DRAINAGE SYSTEM:

9479 The area of the lands, and the appraised value as of December 31, 1913, are shown on page 15 of Exhibit 166 as follows:

Area	8573.35 acres
Appraised value	\$730,223

In Mr. Hazen’s Exhibit No. 164, page 29, he made a segregation of the appraised value as follows:

Sunol Gallery Lands, 5573 acres.....	\$594,000
Sunol other watershed lands, 3000 acres.....	134,800
	<hr/> \$728,800

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

The lands making up the 5573 acres, and the appraised value are as follows:

From page 15, Exhibit No. 166.

Map	Parcel		Area	Appraised Value
12	228	Felton, Chas. N. et al.....	198.94	\$ 12,434
12	G-239	Baldwin, A. S.....	22.25	6,118
12	I-239	.....	.53	100
12	J-239	.....	.40	100
12	K-239	.....	.36	100
12	L-239	Hadsell, Chas.	2,317.59	353,432
15	M-239	Saissett, Pedro, de.....	2,414.54	121,138
12	244	Behan, N. A. R.....	110.00	20,625
12	252	Western Pacific R. R.....	.60	100
12	A-268	Roumiguere	256.90	28,901
12	B-268	Healy	250.78	37,617
			5,572.89	\$580,665

Mr. Hazen (Exhibit No. 164, p. 29) rounded off to.....5,573.00 \$594,000

* An error was made in the computation for Mr. Hazen's figures (\$594,000) by transposing Gale's figures in parcel L 239, viz.:

	Gale's Appraised Value	Schween's Appraised Value	Average
As computed for Mr. Hazen's figure.....	\$374,638	\$359,226	\$366,932
Correct computation should be.....	\$347,638	\$359,226	\$353,432

Error—Excess appraised value of Sunol Gallery lands \$13,500

This error (\$13,500) also appears in the appraised value (\$134,800) of "Sunol Other Watershed Lands" as the \$134,800 was obtained by deducting from the total appraised value of Sunol Drainage System,—the appraised value (\$580,665 + 13,500 excess = \$594,165) of the "Sunol Gallery Lands".

9480

The parcels of land and appraised value, forming "Sunol Other Watershed Lands" shown in Mr. Hazen's Exhibit No. 164, page 29, are as follows:

Map	Parcel		
12	H-239	Sunol Land Co. and Chas. Stone.....	1,172.16 \$ 67,400
15	264	Bangs, B. et ux.....	82.13 4,106
12	267	Bangs, B. et ux.....	175.04 12,690
15	C-268	Backman	494.89 38,354
15	D-268	Mendoza, Jr.	298.91 9,714
17	E-268	Mendoza, Sr.	320.00 5,600
17	F-268	Hughes & Andrews.....	320.00 5,857
15	285	City Suburban Realty Co.....	137.33 5,837
Total			3,000.46 \$149,558

Mr. Hazen rounded these figures (Exhibit No. 164, p. 29) as follows:3,000.00 \$134,800*

* The figure \$134,800 was in the original computation \$134,867.

The figure \$134,800 should be increased by \$13,500 (see above) making the total \$148,300, as compared with \$149,558.

The difference \$149,558—(134,867 + 13,500) = \$1191,—is accounted by fact that in the original computation for Mr. Hazen the average of two witnesses' values were taken on a few parcels where there were three valuations by Company's witnesses, and in the table (p. 15 of Exhibit No. 166) the average of the three witnesses' figures are given.

Mr. Metcalf: If you are on that exhibit of Mr. Hazen's, may I call your attention to one error that I discovered a day or two ago, on page 11 of Mr. Hazen's Exhibit 164, on the cost of Calaveras work to January 1, 1916, on the line corresponding to the year 1916 sum of

the construction cost, \$475,000, plus engineering, \$25,000, plus interest, \$71,700, should be \$571,700 instead of \$471,700; that would change the footing of the column headed "Total payments for year, \$3,022,280 to \$3,122,280.

ONE HUNDRED AND THIRTIETH HEARING.

APRIL 4, 1916.

Witnesses: JOHN J. SHARON for Plaintiff.
M. G. CALLAGHAN for Defendants.
W. L. ATKINSON for Defendants.
J. H. DOCKWEILER for Defendants.
J. M. BAILHACHE for Defendants.

Witness: JOHN J. SHARON for Plaintiff.

9482

DIRECT EXAMINATION BY MR. GREENE.

I have a summarized comparison before me of the gross reproduction cost estimate of inventoried structures under major groups discussed in evidence, and in joint exhibits submitted, with summarized figures covering structures not discussed, excluding overhead and interest-during-construction allowances, as of December 31, 1913, Spring Valley Water Co. This table sets forth the gross reproduction cost estimates of the several engineers on the major groups that have been discussed, and have been included in the joint agreement. The major groups are the wrought-iron pipe outside the city, earth dams and flumes, tunnels, buildings, pumping stations, Crystal Springs Dam, Sunol Filter Beds, Sunol Filter Bed buildings, Niles Aqueduct, submarine pipes, old fences, electric transmission lines, Ravenswood wells, Lake Merced, Lake Merced supply and discharge pipes and pumps, 30-inch conduit from Ocean View to Central Pumps, the Lake Honda supply main, 30-inch Central Pumps force main, city reservoirs, city distribution system. Then is shown the total for the reproduction estimates on page 3 of the various engineers on the groups just enumerated. After that total follows, corresponding with Item 20, Item 21, being the Calaveras Dam. Item 22 structural value not discussed in detail in evidence; Item 23 is the total which would correspond with the total reproduction cost estimates of the various engineers, except for a few minor corrections which follow in Items 24 to 29 inclusive.

9483

Mr. Greene: The items not discussed in evidence, total on the various appraisals between \$344,000 and \$474,000, and included in those amounts are the reproduction gross costs of the Pleasanton ranch houses, so it really reduces the undiscussed items to a minimum.

Mr. Sharon: There is also inserted in this table a small sheet en-

titled "Corrections applied to Dockweiler's schedule". The changes that Mr. Dockweiler made during the progress of the case as to hours with respect to his basis of figuring labor, are taken care of in the tunnels mentioned on this page. He changed the basis from nine hours to eight hours, I believe, and that increased his figures in the first column in the exhibit which he filed. These corrections are corrections he made in court while giving his testimony. These figures are his own figures, and not computations made by me.

The blue print tables on pages 1 to 6 in this book show the gross reproduction cost estimates on the left hand side of the page, and following major groups are shown, and the structures that have not been covered in the major groups, or discussed in the evidence; the amounts that have not been carried of the various engineers' estimates are shown on the right hand side of the page in the last three columns. The total of those items shown in those three columns is shown on page 6, and that is the total which we have carried in Item 22 on page 3.

9484

Mr. Metcalf: Mr. Dockweiler's figure does not include the Pleasanton Hop Ranch buildings, \$344,878.

Mr. Sharon: This table does not include Mr. Dillman's corrections on tunnels. The tables which we have here are all corrected. For example, the changes that occurred in the tunnel schedules caused by Mr. Dockweiler changing his figures are shown correctly in this list we have here. They are not shown in the list the Court had, or that Mr. Searls had.

9485

9486

I have here Mr. Metcalf's Table B revised, which is the table of original cost upon which overhead and interest allowances have been made in accordance with the method outlined by Mr. Metcalf when he presented Exhibit 170. At that time Mr. Metcalf asked to have the table revised, and this is the revised table. The revision was on the interest, and also there was a revision on the lands which were shown as properties out of use. That was the main correction.

9488

(Metcalf's Table B revised was substituted for the original sheets.)

I have also revised pages 9, 10, 11 and 13 of Exhibit 171, which is an exhibit of property out of use and never used, lands and structures. There was an omission of \$7,000 odd in interest in one of the columns, and an interchange of interest on the lands where it should have been interest on structures that have gone out of use.

(These revised pages were substituted for the original in Exhibit 171.)

Witness: M. G. CALLAGHAN for Defendants.

Callaghan

DIRECT EXAMINATION BY MR. SEARLS.

9489

I have before me an appraisal which I have prepared of the Pleasanton ranch houses, and the figures set forth opposite the respective

9490

places correctly represent my estimate of the value of those places. In appraising these places I considered first the value that the buildings lent to the land on which they were located; I then considered what a prospective purchaser would pay for the lands with the buildings on them as against what he would pay for the land without the buildings on them; in other words, I viewed it from a real estate salesman's standpoint. I did not try to find out how many feet of lumber were in any particular building. I had known the buildings for 20 years. I went upon the premises and into the buildings, where I could get access to them, and made a very careful examination of their condition and their age, and the uses they could be put to, and I made notes in my note book at that time, and from those notes made up an appraisement sheet, which is the one that is here before you. I did not have before me at the time the various values placed upon the buildings by the engineers in this case. I understood from Mr. Searls' letter that the engineers had appraised the Pleasanton ranch buildings at about \$180,000, but I did not give those figures any consideration in my appraisal. I found out what the County Assessor of Alameda County assessed the buildings for, but I did not give that any consideration. His figures were less than half of mine.

9491

I considered certain drainage canals on the Pleasanton lands in fixing my appraisal upon the land. If those canals had not been there, I would not have appraised the land as high as I did. Prior to those canals being constructed that land was marsh, and had not the value I placed on it after the construction of the canals, and in the operations that have been had on the land for the last several years. In my original appraisal of these Pleasanton properties, I excluded the buildings.

(Mr. Callaghan's appraisal of the Pleasanton Ranch houses was offered and received in evidence as "Defendants' Exhibit 184".)

Mr. Greene: Mr. Farquharson's appraisal is \$132,000; Mr. Dockweiler's is \$169,000, omitting the Hop Ranch; Mr. Dillman's \$85,600; and Mr. Callaghan's \$85,030.

CROSS EXAMINATION BY MR. GREENE.

9492

Here is my note for the Wenig building. Page 113, structure 113: Dwelling house, plastered inside in some rooms; balance T & G. One brick chimney; 1 terra cotta chimney; 7 rooms; rustic sides and shingle roof. Value \$1,000.

Barn No. 1: Open wings on north side; shake roof; boards and no battens \$300.

Barn No. 2: Formerly slaughter-house; brick center; 15 feet high; concrete floor in brick portion; largest portion of barn north of the brick work; rustic in upper portion, above the brick, and windows in rustic; shingle roof; value \$700.

SPRING VALLEY WATER CO. VS. CITY AND COUNTY OF SAN FRANCISCO

Stock-shed: Open wings; racks for feeding; about 24 by 12, center; outside 40 feet; shingle roof \$40.

Wood shed and two chicken houses \$25.

Tank and tank frame, well, 5000-gallon tank, \$150.

Windmill, steel frame separate, \$50.

Balance of buildings owned by rentor. Total \$2,265.

I looked at this from the point of view of the men who wanted to sell the land. I figured I could talk to him along these lines and say that these buildings were worth about this sum, and induce him to pay that price in addition to the price he paid for the land. I included all the buildings that were in the schedule.

9493

9493-9495

(Reference was made by Counsel of Plaintiff to the 1903 case, where there was some discussion and argument in regard to the organization of the old company. The statement was made that if there was to be any contention on the part of the city in regard to whether that was a sale of the property from one company to the other, and had any bearing on the value of the total plant, that Counsel would like to have that cleared up. It is understood that unless Counsel for Plaintiff hears from Counsel for Defendants, that it is because Counsel for Defendants does not care to have Counsel for Plaintiff go into it.)

Witness: W. L. ATKINSON for Defendants.

Atkinson

DIRECT EXAMINATION BY MR. SEARLS.

9496

I reside at 35 Hawthorne Way, San Jose, California. I am 37 years old, and am in the real estate and insurance business in San Jose, having been in that business for 15 years. The volume of my business runs several hundred thousand dollars per year. I have bought and sold lands in all parts of the Santa Clara Valley, and am familiar with the value of lands in the different parts of the Santa Clara Valley, and the prices which are paid for them, and the sales. My idea of the margin between the values of land, otherwise comparable, with and without water, would be about \$100 an acre. That \$100 includes the investment in structures necessary to place water upon the land. I am familiar with the amount of the investment which farmers and orchardists ordinarily make in the Santa Clara Valley to place water upon their land, and I acquired that familiarity by talking with parties who have been installing plants, and I have installed one plant myself. I would say the amount of the investment incurred by the average farmer or orchardist in placing water upon his land in the Santa Clara Valley would be from \$1500 to \$2500, depending upon the location. The price per acre depends upon the amount of money that the purchaser has, and upon a good many other things. The average size of an orchard tract there I think is from 10 to 20 acres; the

9497

9498 average size of the unimproved lands is probably from 80 to 100 acres. The unimproved land is usually subdivided first, and the water is placed upon it by each purchaser.

Taking the tracts of from 10 to 20 acres, I think that the investment per acre in a plant necessary to put water on the tracts, runs from about \$30 to \$50 per acre. The smaller the tract, the cost will be proportionately larger per acre.

In July, 1914, I sold a 40-acre tract of land just north of the town of Sunnyvale, at \$500 an acre, \$24,000, to Mr. Charles Stowell. This property had a well on it, but no electric motor or power plant. The well was in very poor condition, and he told me that it cost him about \$1,350 to put the well and pump in shape.

9499 I sold 30.80 acres just across the road on Sunnyvale Avenue to a man named Hazeltine for \$14,250; that figured about \$475 an acre, and had no water on it. The Hazeltine sale was closed in July, 1914, and the Stowell sale was closed on the first or second of January, 1915.

I handled the sale of the Singleton Ranch, which is 150 acres, situated 5 miles south of San Jose, on McLaughlin Avenue. It has nothing except a house well on it; no water for irrigation. We are selling that property for \$300 an acre. I think it would sell for about \$400 an acre with water, provided there was a water plant on the land, and that water was absolutely available.

I have 45 acres for sale near Sunnyvale, a part of the Crossman Subdivision No. 4, located just east of the Joshua Hendy Works, and fronting on the Southern Pacific Co.'s right of way. This property I was offering for sale at \$500 an acre. Last year I put down a pumping plant, the cost of which was \$1,306.51; that would be just about \$30 per acre.

Questioned by Master.

9500 There are no ditches at all. Whenever they want to irrigate, they just plow out the ditches. They check the land. There is practically no cost for putting the land in shape for irrigation. I am now offering the land at \$550 an acre, and I will be glad to sell it at that price.

DIRECT EXAMINATION BY MR. SEARLS.

From my familiarity with Santa Clara Valley land values, I would say that the basic principle involved in all land transactions and sales of land is the character of soil itself, and its adaptability to the production of crops that will pay revenue. I think there is some land, but not a great deal, in the Santa Clara Valley, which will not produce crops even if you should put all the water that it wanted on it. I would not think that it would be a criterion at all as to the value of the water on the land to compare the soil of land of that character with the soil of good land on which water had been placed. The adaptability of land for residential purposes in the Santa Clara Valley affects cer-

tain lands. Proximity to a car line, and to the City of San Jose, and to other towns, is a factor in the question of the value of property and the sale of property, but most of the agricultural land has no value from a residential standpoint, it is simply valued from the standpoint of the amount of production you can get off it. I think that is true of the land in the thermal belt in the foothills. They ask as high as \$1500 an acre for lands on the west side of the valley, all the way from Los Altos to Los Gatos. Some people have an exaggerated idea of what the land should be worth because of the residential value. Senator Phelan has a home there near Saratoga, which I understood represents an investment of about \$300,000; Frank K. Lane owns a piece of land in there, and also Chas. D. Blaney. Wealthy men are coming into that section of the country for residential purposes, and are paying very much more than the value of the land from an agricultural standpoint. The ability to pump water on that kind of land does not play any particular part in the value of the land.

9501

CROSS EXAMINATION BY MR. GREENE.

If you get close to Sunnyvale, or any of the other little towns there, you get a higher price than you do when you go out 6 or 7 miles. The character of the soil, and the kind of crops planted on the land, and a great many other factors, in addition to the proximity to town, have to do with making up the actual valuation. There is a particular element of residential value in the foothill section from Los Altos to Los Gatos, and also on the east side of the Santa Clara Valley.

9502

The 45 acres that I spoke of near the Joshua Hendy Works, is about a mile, or three-quarters of a mile from the station at Sunnyvale. There are a number of industrial enterprises located there. It depends on how the proposition is handled as to whether you develop an industrial value in a location of that sort or not. There is a little value there. They started out to make an industrial center down there, but they over-capitalized their proposition, and the bubble burst, and they got down to sound value; the property I was handling there was property formerly in the ownership of the Sunnyvale Land Co., and they were offering it at about \$1,500 to \$2,000 per acre. They probably could have sold that property at the price at which I sold it, \$500 an acre, which was the going price, and the market price of land in that section. If those sites were to be used for further manufacturing, water on the land would be comparatively unimportant, but it is a fact that the water which was developed there was developed for agricultural purposes.

9503

There is a piece of property in the Evergreen District; what we term bench land—consisting of 100 acres about 5 miles easterly from San Jose, owned by a Mrs. Higgins. It is up out of the valley on the first little elevation. We have been trying to get her to sell that 100

9504 acres for \$265 an acre. We had an offer of \$26,500 cash, but she refused to accept it. She is asking \$300 an acre for the land. That property, I would not think, has any residential value, but it is along in about the same location as the land that has been snapped up in that part of the valley because of the beautiful view. It has a distinct residential value, I think, but it would be in excess of this figure which has been offered.

9505 The Singleton Ranch, which is in the valley, and which has no water except the house well, we are selling for \$300 an acre, 150 acres. When I refer to land without water, I mean lands on which there is a possibility of developing water. I think that possibility exists everywhere on the floor of the Santa Clara Valley.

There is very little water on the surface in the Santa Clara Valley, it practically all has to come from wells. I don't know of any land where water is not available. I have heard of three or four different parties who have sunk wells and failed to get water, but it seemed to be the opinion in those cases that they were unfortunate in locating their wells. It didn't have any effect upon the lands. It did not have any effect upon this particular piece of property; there is a pumping plant on the next piece of property adjoining it, and water is available from that piece if anybody wanted to buy it. If this owner had got in line with that other well, he probably would have obtained water also. That is the only instance of that kind I know of.

9506 There are lots of places in the valley that have not the water actually developed on them, but there is water available. In the orchard section, where there are small holdings, 10, 15 or 20 acre pieces, it hardly pays one man to invest \$1,500 to \$2,500 to obtain a plant. I know of a number of different cases where four or five parties will get together who own adjoining pieces, and they will put down a community well on the highest point of the entire tract of land, and each one will contribute pro-rata, according to his acreage. There are numbers of pieces of property there that don't have an irrigating plant on them, but upon which water is available.

9507 My own personal experience, and my knowledge of plants which have been put down in the Santa Clara Valley, indicates to me that it costs from about \$1,500 to \$2,500 to install a pumping plant. I have put in one plant on my own property, and that is all I have installed personally. I have not had direct charge of the installation of any plant besides that. With reference to the cost of \$30 and \$50 an acre to irrigate land in the Santa Clara Valley: Take this piece of property which I own, 45 acres, my plant cost me \$1,306.51. It was about \$30 an acre. In the Santa Clara Valley in almost all sections where the development of a pumping plant is practicable—I maintain it is not practical to pump to develop when you get out toward the foothills—your average depth is about from 150 to 250 or 300 feet. They

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usually put down a pit. The cost in all sections of the valley is just the same for digging a pit, all of the well borers charge \$5 a foot until they strike the surface water; if you wish your pump set below the surface water, you have to pay \$9 a foot for the depth you go under the water. For boring the well it costs 70 cents a foot for the first 50 feet, and 50 cents a foot for the 10-inch casing. In other words \$1.20 a foot for your well. That is down the first 100 feet. After that for every 50 feet you go down, they add 25 cents per foot. A 30 H. P. electric motor will cost you \$390; your pump will cost you—a No. 5 pump which will produce 1,000 or 1,200 gallons a minute—about \$300; in other words, your machinery will probably cost \$700 or \$800 for the average well in the Santa Clara Valley. Then you have the cost of digging your well. They usually have to put down two wells to get a sufficient flow of water. I was fortunate in my plant in only having to put down one well which is 227 feet deep. In my plant we went down 30 feet; we struck surface water at 17 feet, and we went 13 feet under the water. They had to put a pump on to pump out the surface water while they excavated. After that they drilled in the bottom of the pit. Those are the regular well-borers' prices: There is an average price for putting down these wells, and if they never put down a well for irrigation, they would be boring the house wells on every 5-acre piece to develop enough water for their chickens and for house purposes. Everybody has to have water in my neighborhood. Of course, the people are coming more and more to feel that they would like to have knowledge of the fact that there is water to fall back on in the case of necessity. Once every 10 or 12 years we have a season or two that is a little bit dry, and in those seasons the water is of service to the orchardist. I think that water is an advantage, and is so considered, and I think it would add to the value of the land about \$100 an acre. I base that on the average sales that have been made of pieces with water and of pieces without water.

9508

9509

With references to pieces of land that I have sold without developed water for irrigation: I have sold the Singleton Ranch at \$300 an acre. Just recently we have had turned down an offer of \$265 an acre for the Higgins property; they are asking \$300 an acre for it. That is not considered to have a residential value, because as yet there is very little residential development in the Evergreen country.

Joseph H. Rucker & Co. made a sale of a piece of property without developed water in the Coyote section, about 12 miles south of San Jose, 308 acres, a portion of it hill, and a portion of it valley land, for \$60,000. I don't know of my own personal knowledge that that was the consideration, but that was the consideration stated. That makes it about \$200 per acre. There was a sufficient portion of it in the hills so as to increase the valley land to about \$300 an acre.

9510 The McKissick property, bought by Mr. Walter J. Edwards, and Mr. Chilton, 390 acres, at \$150 an acre, \$60,000: Mr. Edwards immediately sold his portion, 200 acres, on a proposition where the people are to pay him \$300 an acre, and to pay him the cash in 7 years. They bought the property practically undeveloped. That is, there is no water on it, and no trees. These people practically took an option on it for 7 years on the basis of \$300 an acre. They are not
9511 selling it off now, they are developing it. There was a piece of that property transferred to a man named Cox; it was a piece that was owned by William Sheriffs, who bought 60 acres of that particular piece; there was an orchard on it. Mr. Edwards told me that it was transferred on a basis of \$375 an acre within the last month. There is a pumping plant on the Richmond piece of 100 acres which he put down there in order to crop the land between the trees. I think that is the only sale out of that parcel since water has been put on the land.

On Downer Avenue, about 7 miles south of San Jose, we sold about 4 years ago a piece of property known as the Cahalan Ranch. That property consisted of about 802 acres, of which there were about 150 acres of hills, worth about \$30 an acre I would say, and
9512 about 100 acres of 150 acres of low land, which was not worth over \$150 an acre at retail price—that is what we sold it for afterwards in subdivisions—and about 400 acres of what we considered good valley land, average land for orchards. We immediately subdivided that and resold it, selling the valley land at from \$210 to \$225 an acre. That was 3 years ago, and was all undeveloped land without any water or anything. It simply had been farmed to grain, and it was pastured prior to that time. After completing the sale of that ranch, we subdivided it and sold 100 acres to a Swiss named Matasci; we subdivided that and sold two 15-acre pieces, one to a man named Sherwood, whose residence is in Berkeley, at \$275 an acre; he had no water, and has no water today, to my knowledge. He planted an orchard, and the trees are making their third years' growth this year—prunes. We sold 26 acres in 2 parcels to a Doctor Byl who resides in San Jose, 16 acres of it at \$275 an acre, and the other 11 and a fraction acres for \$250 an acre. That is land without water. Dr. Byl put down a house well after he got it. Water was available underneath the land as to those two pieces, but I don't know of any actual land in the floor of the valley where water is not available.

9513 Good orchard property is now selling in the Santa Clara Valley at from \$600 to \$1,000 an acre, and more than that. I have sold land with water on it, but without an orchard on it. We sold 21 acres 2 years ago on the Milpitas Road, which is the State Highway now, it is on the Oakland Road out of San Jose, near Wayne Station, which had a pumping plant on it and a barn; I think it had tomatoes and alfalfa on it. We sold that for \$500 an acre.

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I know of a sale just west of Santa Clara, about 143 acres, in alfalfa; that has some water on it, and sold for \$400 an acre. The property belonged to a man named Webber. Those are the only two cases that I can give you offhand with water without an orchard.

I should say that the average land in the Santa Clara Valley with water developed on it would be worth from \$400 to \$500 an acre. I think the average land without the water runs from \$300 to \$500 an acre, depending on the location and the adaptability of the land to the various fruit crops.

9514

My cost of installing the pumping plant was reached by taking the cost of installing the plant, and then dividing by the number of acres in the tract in question. Another point with reference to that is that you don't find anyone putting down a plant for irrigating a 10-acre piece. The report shows quite a number, but it has been on land subdivided later. A place that was in large holding, and that had a pumping plant, developing sufficient water to cover the needs, with the development of power pieces, has been sold off until the piece on which the plant is is not over 10 acres. The Santa Clara Valley was in large holdings at first, and as population increased it was cut up in smaller and smaller holdings. Take the Singleton Ranch that I am selling, of 150 acres; they are going to put a power plant on that property. Later it will be subdivided. I don't expect it to be put on in over 10-acre pieces. Whenever a portion is sold, there will be a provision in the deed that the purchaser has a right in the whole plant.

9515

There are people who have developed water for both 10 and 20 acres, but it is not a common practice now. In some of those cases it was a reasonable and profitable business transaction for the people who owned the land, because it insures them of a sufficient water supply in a dry year. The installation of a pumping plant to cover 10 acres of land makes your acre cost \$130. I am not sure that that expense was warranted if it were carried out and proceeded from year to year. I can tell you an instance now of a man named Foster who owned a 10-acre place on the corner of Infirmary Road and Fruitvale Avenue, about 3 miles west of San Jose. He has a pumping plant on that property, and it cost at least \$2500. He has a 72-foot pit which is all concreted, and a well in the bottom of that; he has a 35 H.P. electric motor to lift that water, and the Electric Co. charges \$6 a horse-power minimum whether you use any juice or not. This man has to pay \$210 a year to the company. Orchardists seldom irrigate more than once a year. There is a pumping plant on the property adjoining his piece where he could buy his water for \$1.75 an hour. It would take him about three or four days to irrigate a 10-acre orchard. This man could buy his water for that particular 10-acre piece for \$50 a year. It costs him \$210 a

9516

year for power, for which he has to sign a contract, and he is losing the interest on a \$2500 investment.

- 9517 He would have had to pay more than the \$1300 that I paid for my plant, because it is further to the water; the construction is all on the basis of so much per foot in depth. I only had to go 30 feet with my pit. It would cost him more to lift his water than it costs the tenant on my place, because his pump is at the bottom of that pit, and he has a 72-foot lift. It takes a 35 H.P. motor to discharge an 8-inch casing full of water. I have only about a 35 foot lift on my plant, and I had to put in only a 30 H.P. motor, and I could probably have gotten along with a 25 or a 20 H.P. motor. In some instances, I think you will find people in the valley who have paid as much as from \$100 to \$150 an acre to get water on their lands. In some instances I think it runs as high as \$200 or \$250 per acre.
- 9518 Of course the cost is measured largely by the size of a plant that a man puts down. I know of one plant out west of San Jose, near Cupertino, just beginning to get up on that higher land out there, where they had to go 120 feet with their pit before they struck surface water; that plant cost \$3500 I was told. The lower you have to go for your water the more expensive it becomes; the cost of installing is all on the basis of so much per foot to reach the water, and then, of course, the cost of operation is more expensive, because you have a greater lift, requiring more power.

RE-DIRECT EXAMINATION BY MR. SEARLS.

- 9519 The piece of property on the Milpitas Road that belonged to a man named Hancock, we sold to a party named Wittenberg. The year we sold it it had tomatoes on it; he put it into alfalfa. He transferred it just recently, and I was told he got \$750 an acre for it with the alfalfa developed on it. The Webber piece is planted, I think, to 100 acres in alfalfa; that land is not as good land as the other, it is colder land, it has more of an adobe soil, and alfalfa does not do so well there. As to both pieces it has been demonstrated that they would produce crops. There were crops on both pieces at the time they were sold. There is very little poor land in Santa Clara.

- 9520 Good vegetable land ought to bring \$500 an acre. There has been an increase in the land itself, irrespective of the water, on account of the fact that orchards have been paying very well in the last 3 or 4 years. I know of one 15-acre orchard that produced \$9,000 a year. The places where I said they put down plants at from \$150 to \$200 an acre were in orchard or were to be planted in orchard. When a man takes a piece of bare land to develop it, he usually does as Mr. Richmond and these other people did on the McKissisk place, take the bare land and plant it out, and develop water on it. They develop water for the primary object of raising

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crops between the trees until the trees come into production, and also particularly for the irrigation of the trees themselves.

RE-CROSS EXAMINATION BY MR. GREENE.

The vegetable land that you see around Milpitas is worth without water developed from \$250 to \$400, or \$500 an acre, depending on different pieces. There is some low land in there, and there is some land with a little alkali in it. The land on the hills that is planted in early peas will sell for more than the valley land, because that is in the thermal belt, and they don't have any frost. That will sell for \$350 or \$400 an acre. That is the best land we have in Santa Clara for apricots; it is the most profitable crop, and they don't get frosted. That is the kind of land for which I had an offer of \$265 an acre, and Mrs. Higgins wants \$300 an acre for it.

9521

Witness: J. H. DOCKWEILER for Defendants.

Dockweiler

DIRECT EXAMINATION BY MR. SEARLS.

9522

The costs in the Central Reservoir in Oakland were largely in excess of what the work could have been done for. First, the company did not, in my opinion, have a good credit, and second, they had the work done on force account, which was not done economically. The contractor did not care how he did it, as he was getting 15% profit on all expenditures. I saw that myself, I know it.

9523

The contract sets out fully that they had the option to pay in notes, and those notes bear a certain rate percent of interest. That would have bearing on the lowest contract price they could obtain. Also there were all sorts of equipment handled there. The material was handled with scrapers on long hauls and was trapped. No conditions like that ought to be encountered on the University Mound. There were irregularities in the bottom of the basin that had to be covered over. You would not have that condition of affairs occurring at University Mound.

Questioned by Mr. Greene.

The reservoir site itself was very irregular, and made additionally so by the inroads of the steam shovel. As it is finished, it is a very regular piece of work, long slopes. The slopes on that reservoir are probably over 100 feet long, and there is no such length of slope in the University Mound Reservoir. I have no idea how many cubic yards would be covered by this extra work on the Central Reservoir, but it would be very costly work. I cannot hazard a guess as to what that would amount to.

9524

DIRECT EXAMINATION BY MR. SEARLS.

The table which you have handed me was prepared by me in the last Spring Valley case in 1903-04. My figures run from 1858

to and including the year 1903. It sets forth the year, the name of the company, the capital actually paid in, the undivided profits put back into the work, and the final investment of the stockholders at the end of each year; then the dividends distributed; it gives, also, the total profits for each year, which is made up of the total of the dividends, and the undivided profits, and then the percentage is given of those profits on the total investment. The savings bank rates of interest; the rates of interest paid by the company on its own loans. There are deductions set forth as to the amount that would have been earned by the total investment if put out at savings banks rates; another column gives the amount that would have been earned on the total investment if put out by rates of interest paid by the company on its own loans. Then there is a column which gives the difference between the total profits and the amount that would have been earned at savings banks rates of interest. Another column shows the difference between total profit and the amounts that would have been earned at rates of interest paid by the company on its own loans; the source of information is also given. With reference to the exhibit references to Mr. Reynolds' testimony, that refers to testimony given in the year 1905. The last two columns headed "source of information" refer to my testimony given during the year 1905. The first of those columns follows a column headed "savings bank rates of interest". I obtained that from a statistical publication containing an article by Professor Plehn, head of the Statistical Department of the University of California.

(Objection was made to the admission of that as a source of information, and ruling was suspended.)

The column headed "rates of interest paid by the company on "its own loans" I determined from an examination of the minutes of the company. Pages 1 to 26 in this exhibit set forth all the loans, with the exception of about 4 that I omitted, made by the company, and the rates of interest paid thereon as shown by the company's minutes. The minutes would state that the president is authorized to borrow so much money at say 5% or 4%, or whatever the rate is. It includes no expenses whatever. The four exceptions that I refer to were about the year 1903. A note of \$25,000 to the Security Savings Bank, at 5%; a note of \$100,000 to Williams, Diamond & Co. at 5%; a \$50,000 note to H. H. Hewlett at 5%; a \$25,000 note to the California Safe Deposit & Trust Co. With those exceptions all the notes that I was able to find are set forth in the tabulation. Those four loans are shown on page 415 of minute book D.

Questioned by Mr. Greene.

There is one loan, November 13, 1902, payable in one year. That is on page 25. A great many times the term is not given. For instance, on page 24 a note dated March 15, 1900, interest payable monthly; it does not give the period which the note is to run. When-

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ever there was any security given, and the minutes recited it, I attempted to put it in this notation. In cases where it does not appear that security was given, I don't know whether it was an unsecured loan or not. I am just setting forth what the minutes give, and sometimes the minutes set it forth, and sometimes not. Take it in 1890, note 17, dated December 11, for \$100,000, to the Luning Co., who gave the note to the company to the order of George Whittell, due April 8, 1891. This was a note given December 11, 1890, and 150 second mortgage bonds were given as security. I wrote out the memoranda relative to each loan, and all the memoranda that I got from the minutes are set forth in this tabulation. Those minutes are now in existence.

9529

Mr. Searls: It is shown in nearly every case that these loans were short-term loans.

Mr. Dockweiler: Prior to the years 1902 and 1903, it depended upon the period of time whether the company charged the legal fees, and the costs of abstract, in their operating expenses. There was one period when such expenditures went into construction, and another time they went into operation.

9530

Mr. Greene: We will agree with the witness on that statement.

Mr. Dockweiler: Referring to Table 1, the year 1880; I have taken sub-totals showing the gross amount of the dividends and undivided profits at that date as compared with the return on the total investment at savings bank interest rates, and at the rates of return paid by the company on its own loans, as shown in my table, which shows that the company had, up to 1879, at rates paid by the company on its own loans, received \$69,000 less than the amount which those rates would yield.

Mr. Searls: Those figures appear in the center of the table. It shows that \$69,000 less than the amount which the rates paid the company would have yielded had, as a matter of fact, been received by 1879, and it shows that the sum of \$1,435,923 in excess of savings bank rates of interest had been received, assuming Mr. Dockweiler's statement of savings bank rates of interest here. That appears in column 19.

9530½

Again in 1903 a similar total is taken, showing that the earnings of the company in dividends and undivided profits in 1903 amounted to \$26,441,000 as against \$20,833,000, which savings bank interest rates would have yielded, and as against \$23,930,000, which the rates paid by the company on its own loans would have yielded on that date.

9531

The sum of dividends and undivided profits for each year is compared by applying the interest rate in question to the total investment to date; if it was more than that sum it appears in the profit column. If it was less than that sum it appears in the loss column. That difference is not carried into the capital sum the next year. You have no compounding effect.

9532

Mr. Dockweiler: It is not compound interest affair.

Mr. Metcalf: Then you do not assume that the investor earned any interest on any deficits; in other words, he did not get the rate which you assume that he did throughout this period?

Mr. Searls: This is not introduced for the purpose of showing whether the investor earned interest on deficits or not. It is introduced for the purpose of showing the rate of return the company paid on its own loans, and also to show that by 1879 we claim whatever losses may have been incurred in starting the business has practically wiped out. We do not concede your theory of carrying development expenses clear through the life of the plant instead of terminating them at some time toward the end of the development expense.

Mr. Greene: After you have gone on 2 or 3 years you don't take into account the losses at all, so far as the property on which you reckoned your savings bank rate of interest.

Mr. Searls: You compound interest on neither losses nor profits.

Mr. Dockweiler: I take each year by itself, and close the transactions for that year.

9532 A

Mr. Metcalf: In this table the assumption is made that the element of time is of no consideration; in other words, that a deficit incurred 3 years ago may be repaid today at the same face amount?

Mr. Searls: No, sir. Some reasonable period of time must be taken, over which these early losses must be made up.

Mr. Metcalf: But I understand that within the limits of this table you have made the assumption that you may repay that deficit at any time without interest allowance during the interval?

Mr. Searls: Yes, I think that is correct.

Mr. Dockweiler: Take column 17 and 18, those figures are derived in the following manner: The amount which is the total investment for the year 1858, and which appears in column 7, is \$185,000; the rate of interest which appears in column 13 is 18% savings bank rate of interest; multiply the \$185,000 by the 18%, and it gives \$33,300, which appears in column 17. Taking the rate of interest paid by the company on its own loans, appearing in column 15, which rate is 30% for the year 1858, multiplying \$185,000 by 30, we get \$55,500, appearing column 18. Those figures appearing in columns 17 and 18 are carried forward, and appear again in columns 20 and 22 under the head of "Losses Spring Valley over Savings Bank method", so that each year is a transaction closed unto itself, and nothing is carried forward, except the totals.

Bailhache

Witness: J. M. BAILHACHE for Defendants.

9533

DIRECT EXAMINATION BY MR. SEARLS.

The portion of this table which Mr. Dockweiler has just identified, headed "additions to the above table, bringing it to June 30,

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1915", were prepared by me, and my sources as to savings bank rates of interest were taken from the records of the Savings Union Bank & Trust Co. The table entitled "rates of interest paid by the "company on its own loans" were made up from the company's books, showing the loans as set forth on pages 59 to 63 of this exhibit.

The one million dollar gold note issue, 5½%, was taken from the ledgers and the general books of the company. 9534

The \$840,000 shown in column 3 was taken off the books of the company, the ledger accounts. It refers to the assessment levied after the fire. 9535

The undivided profits are shown from pages 27 to 53. We put all the cash receipts covering the 8 years from 1907 to 1915, and then we took the expenditures against that. The difference, as shown, indicated what went into permanent improvements—real estate, new construction, and the small balance that went into the replacement account still unexpended. Then on the other side of page 28 it shows the money that was not considered from revenue, real estate sales, insurance, net receipts from loans, and from special deposits, and meter guarantee deposits, which left the remainder, \$2,276,980 coming from revenue as applied on the purchase of property, and was undivided profits put back into the business. That I have added to the dividends for that period as showing the total amount earned by the company and put back into the business. That is added in column 7. The pages from 29 to 53 show the details from which this summary on page 28 was made up.

The replacement account is the remainder of the rehabilitation expense, the \$611,000 that was spent out of the \$840,000 levied as an assessment; that was the portion that was spent in this period. I did not handle the depreciation account at all; this is simply a receipt and expenditure account to show where the money was derived from that was used in the business. 9536

Mr. Metcalf: Q. What I want to know is this; in the first table which you submitted you have an undivided profit account of \$2,276,980.48; from that must the company make the provision for depreciation of \$260,000 a year?

Mr. Bailhache: A. No, sir, that had nothing to do with this statement. This statement was taken to find out how much money they could have taken out of the business and put into dividends, but that they put back into the business, and used it to buy property with. This statement on page 53, called replacement account, is really your rehabilitation account, which Spring Valley changed on the books, and finally called it a replacement account. It does not concern depreciation at all. It has nothing to do with depreciation.

Mr. Metcalf: Q. I was addressing myself to Table 1 of this exhibit, in which you show undivided profits of \$2,276,000, approxi- 9537

mately. I wondered whether you had deducted the depreciation set aside before determining the net profit?

Mr. Bailhache: A. Why should I deduct the depreciation? This is just an account to show how much money was put back into the business, money that they received from revenue. This is no account of reserves, or anything of that sort. This simply shows the money they received and the money they spent. The Spring Valley has received no money from sales of general mortgage gold bonds since 1905, but it has made permanent improvements, lands and structures with money derived from revenue, and put back into the business; also from borrowed money, and from money received from real estate sales,—when they sold the Stockton St. property, and various other sources. Now, that money they got from real estate sales, and the net money they got from loans, and the net money they got from other items that were not revenue, added to what they took back from revenue—what they took out of revenue—is the money that they used for their permanent improvements. They did not sell any bonds during that period.

9538 Mr. Metcalf: This is simply what went back into the account again.

Mr. Searls: Yes. In other words, this is simply the stockholders account; it does not take any account of stocks or loans, or anything of the sort; it is simply to show what the stockholders could have got out of the plant if the directors had not reinvested a certain amount of the surplus in new construction.

Mr. Metcalf: You should add to your last statement, Mr. Searls, or if they had made no allowance for depreciation.

Mr. Searls: I think not, Mr. Metcalf, because the fact remains that they did put this money into new construction, and it is treated here as a capital item, not so much as a net revenue item. The item of undivided profits is profits actually put back into new construction or replacement. When we come to consider the dividends paid, we assume that it is paid after allowance for depreciation was made, so we do not ignore the depreciation account there when we consider the revenue end of it. With the exception of the year 1907, the record in this case shows that depreciation was allowed for out of the dividends; you set aside \$260,000 a year.

9539 (Table of investment and profits out of Spring Valley Water Co., 1858 to 1915, introduced and marked "Defendants' Exhibit 185".)

(Wenzelberger's report and audits Spring Valley Water Co., introduced and marked "Defendants' Exhibit 186".)

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